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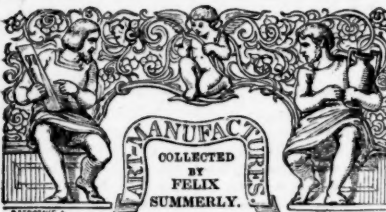
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LONDON, SATURDAY, JULY 10, 1847.

## REVIEWS

*Letters from the East Indies*.—[*Briefe aus Indien, &c.*]—By Dr. W. Hoffmeister, Physician in the Suite of his Royal Highness the Prince Waldemar of Prussia. Edited, with Extracts from his Journals, by Dr. A. Hoffmeister. Brunswick, Westermann.

THAT Prince Waldemar of Prussia was lately a traveller in the East is already known to the British public from Lord Hardinge's despatches describing the battles on the Sutlej; in which honourable mention is made of the gallant appearance of his Royal Highness in the field, as a volunteer, throughout the brief and bloody contest in which the military power of the Sikhs was fatally humbled. In the second of those actions, at Ferozeshah, when Lord Hardinge advanced in front of the line to encourage the British troops, beginning to waver under the deadly fire to which they were exposed, the Prince insisted on sharing this honourable danger, and rode forward by the side of the Governor-General attended by his whole suite. In this exposed situation one of these attendants, Dr. Hoffmeister, was killed on the spot; and thus, a career begun under the happiest auspices in the more peaceful fields of science was unexpectedly brought to a tragical and premature close. To travel in the East had been the earliest wish of this young student. Recommended by merit alone to be the Prince's companion, he had attained the gratification of this desire in a manner exceeding his most sanguine hopes. After a long and interesting journey, he was about to return to his native country, enriched by the stores of knowledge which his diligence had enabled him to collect,—with a view, no doubt, to their arrangement and record in a literary work. The bullet which struck him down on the field of Ferozeshah suddenly ended this prosperous course,—under circumstances that add another impressive instance to the mournful list of evidences of the vanity of human wishes. These circumstances give an increased interest to the work now before us—containing all that is left of an existence rich in youthful energy, adventure, and scientific promise.

Without the advantage of any such special recommendation, however, these letters would be read with pleasure. They were merely intended to give some account, to friends at home, of the various impressions of the journey as they arose,—were written always in haste, and frequently in the spare minutes of fatiguing expeditions—and thus, of course, are chiefly occupied with personal occurrences, and contain in other respects the mere fragments of what the traveller might have told us had he lived to arrange his notes and recollections at leisure. Of the latter part of his wanderings, especially amidst the rugged peaks and snows of the Himalaya, the narrative which he had time to set down is little more than a record of the difficulties overcome in each day's advance. But this very circumstance, perhaps, increases the vivacity of the narrative: which records the immediate impressions of the moment on a mind of great quickness and power of observation,—conveyed in a style easy, rapid, and expressive,—bespeaking throughout the heartiness of one engaged in a pursuit thoroughly congenial, and gifted with an open sense for the new aspects with which men and natural objects present themselves to the wayfarer in foreign lands. The course of the Prince's journey brought within view some of the most characteristic features of the Levant and of the further East. From Trieste and

Ancona, it first led to the Ionian Isles, Patras, Corinth, and Athens; thence, by Alexandria and Cairo, down the Red Sea; from Aden to Ceylon; afterwards by Madras to Calcutta. The party then crossed by the northern provinces of Bengal into the Nepalese territory; and, after visiting Lucknow, again pierced into the Himalaya district, and even penetrated through it, for the space of some days' journey, into Chinese Tartary. After a painful traverse of this mountain range, exposed to extreme fatigue and hardships, not without danger, the Prince descended to Simla. From this resting place the party was roused by incursions of the Sikhs; and in a few weeks more the notes of our amiable traveller close,—a day or two before he fell in the manner which we have already described. From this outline, it will appear that the journey must have presented many of the most striking varieties of Eastern scenery and climate:—ranging from the bare Arabian desert to the rich bowers of Ceylon,—including the scorched plains of Bengal and the eternal snows of the giant Himalayas, with all the various races of men and the monuments or ruins of their present or past existence which they so abundantly contain. How these presented themselves at the first glance to the eyes of a traveller of no common order the following extracts may partly show.—The party had reached Cairo at midnight. The dawn of the next day displayed its features with all the charms of a surprise, after the lifeless banks of the Nile and the arid sands of Alexandria.—

It was now daylight. The blinds were thrown open. What a heavenly view! To the left, a long range of oriental houses, with wooden cages richly carved, instead of windows; and amidst them palm trees and mimosas rising in grand picturesque groups above the garden walls. The long row of houses and palaces is closed at the end by a splendid but slender minaret; and many others are visible in the foreground, handsomely painted with varied red and white. The central part of the background is filled by a wood of palms, stretching into blue distance; near to this, on the right hand, rise the giant structures of the pyramids of Gizeh. They fill the place of mountains,—which are otherwise wanting to complete the beauty of the picture. On the horizon, to the right also, the desert may be distinctly perceived, by the yellowish grey vapour of the atmosphere which hangs over it. The foreground in that direction looks all the lovelier for this: it consists of a thick wood of acacias, in the freshest green of spring. In the interspace lie blooming maize fields; and directly in the midst of the plain is a small lake, closely embowered with rows of the Labek-acacia. Directly past this pool, there runs one of the most frequented highways leading to the city:—it leads across the wide square of Es-bekeh, into which the windows of our hotel look. A crowd of asses, tottering under burdens of fruit, with brown colts trotting after them, come towards the town;—then a file of slowly-pacing dromedaries, the head of one fastened by a rope to the rear of its leader;—women in blue shifts and trousers, carrying a huge vase on their heads, a smaller one in the flat of the hand, which is held above the shoulder, and having often, besides these, a naked infant astride on the unoccupied shoulder;—white Copts, with the black turbans;—black Nubians, in their long white gowns;—lean, wizened, filthy-looking Arabs, and clean, well-fed corpulent Turks and Armenians. All here are pressing onwards towards the city. Opposite to our window, the eye has the refreshing sight of leafy sycamores and acacias. No one can imagine what a blessing it is to enjoy the view of green trees, which have been wanting ever since we left Vienna. Here, at last, there is shade;—here there is water;—here we have clean beds and an extremely comfortable breakfast. No sooner was this over, than our curiosity could be no longer controlled. We leaped on the asses which were standing for hire under the window;—and forth we sped into the heart of the city of the Khalif.

After the confinement and other discomforts of the voyage from Suez, the aspect of Ceylon was still more welcome. Here, indeed, the whole abundance of tropical nature seems to be poured out with greater profusion and fewer drawbacks than were found in any other spot visited by the travellers. The party were rowed on shore—

in a crazy kind of raft, by spare copper-coloured fellows, with lively black eyes, finely cut features, and hair of a raven black, wound into a knot at the back of the head.—Their only clothing was a petticoat of the barest dimensions. Amongst them were boys with the loveliest faces imaginable, and black hair falling in plentiful locks down their backs. \* \* \* The sun shone in full glow, and the aromatic breath of the island of spices was wafted towards us in thick clouds of fragrance. In the sudden change from the elastic sea-air to this heavy greenhouse-atmosphere laden with the perfume of flowers, I had exactly the feelings of the convalescent from a long illness when he is taken for the first time into a blooming garden on a warm spring day. It is surprising how far out at sea this fragrant air may be perceived before approaching land.

Their quarters, when reached through a crowd of natives in various showy costumes, were found to have been happily chosen.—

We arrived at the old Dutch gate, which now is quite green with moss; and opposite to it was the place destined to receive us—an open old-fashioned looking building of a single story, surrounded with an airy verandah. Over the entrance there is a vane, with the date 1687. It was the "Queen's House," or government buildings. The interior consisted of large rooms with stone floors;—three of these were allotted to us. They were provided with doors to the galleries on each side, which supplied the place of windows, and contained nothing but immense bedsteads, eight feet square, with muslin curtains. A glimpse into the court soon tempted us from our cool open lodgings into the open air. What a glory of red and yellow hibiscus! What lovely, thickly-grown violet turf, such as I had never seen since I was in England! Here grew the splendid plumbina, with its deliciously fragrant scent; there bananas of giant size; papay, and bread-fruit trees, reared their lofty heads over the wall. We descended a flight of steps, green with the continued warm moisture of the climate, into the shrubbery, a kind of wilderness, peopled with countless species of living creatures. \* \* \* It can hardly be described what a strange impression the abundance of tropical nature—the warm moist air, heavy with the fragrance of spices and cocoa-nut oil—the fairy-like glimpses of light piercing with broken but vivid rays through the bushy crowns of the palm-trees—makes on the traveller. Thickets of rich blooming yellow, blue, and red, and bell-shaped flowers embower the cleanly dwelling-houses which, built in the antique Dutch fashion, with a small verandah at one side, border the road all the way to Colombo. Old Dutch inscriptions are met with everywhere, on aged brick walls, half decayed by time and weather, and overgrown with the greenest moss,—as if the region had long since been forsaken by living men. Every thing produces on the mind an impression of dreamy quiet. \* \* \* Myriads of slender green snakes glide under the leafy bushes; crabs of the brightest colours run to and fro amongst the stones, and, when pursued, take refuge with hasty sidelong bounds beneath the closely matted creepers of the beautiful red-flowering astragalus. The ananas and the pandang flourish here, as wild plants, on the drier rocks, with no other nutriment, it would seem, than what they draw from the continual moisture of the air.

This condition of the atmosphere, favourable as it is to the beauty of vegetation, is not, however, wholly without its disadvantages. It stimulates the growth of insects and reptiles, as well as of fruits and flowers; and some of the former are sadly in the way of a traveller's excursion, especially if he be one apt to "peep and botanize."—"In the close and shady places," we are told, "under cover of the immense masses of foliage, there prevails a steaming atmosphere

highly desirable for scorpions and serpents;" but somewhat formidable to man, for various reasons. The land-leeches—the swarms of which seem to be as countless as their dexterity in piercing human legs through every safeguard of stocking or spatterdash is notable—sorely perplex our naturalist, whom a steep ascent compels to dismount and pursue his way on foot. On one occasion of this kind, we read, in an excursion into the interior:—"We had to let the horses be led forward, and toil up the slippery path on foot; a process which here was particularly unwelcome to us, since their bleeding fetlocks gave signs of unusual numbers of land-leeches—that terrible plague of Ceylon. Besides the natural dampness of the spot, it had also been raining there the day before, which had brought these little creatures out by millions. They very soon were swarming all over us, and infallibly spied out every opening in our dress, were it even the smallest crevice possible,—by which they were enabled to torment us in a frightful way. The most vigilant precautions to defend our legs and feet were quite useless. As many of these little brutes are no thicker than a common pin, they work their way through any clothes, or even creep up them as high as to the neck; where their presence is still more annoying. Our Cinghalese had less to suffer from them than we had, in spite of their going barefoot; as they have a way of stripping them off very dexterously."

Still more inconvenient is such *gratis* blood-letting to the man of science when society demands his presence, and the climate enjoins white Russia smalls.—"Towards evening"—on one occasion—just as the dinner bell was about to ring, when our excellent naturalist was already dressed—the infinite number of fire-flies which were fluttering to and fro over the grass tempted his unwary feet to chase them "and collect some dozens in a phial. Now, just as it was time to go to table, I observed in the brilliantly lighted apartment streaks of blood all over my white trousers from waist to toe. I was not long in doubt as to the cause: this was my first experience of the leeches whose subsequent performances have left so painful an impression on my memory. On my legs I found some hundreds of these reptiles, which had made their way through my pantaloons; and had to rid myself of these uninvited guests with lemon juice, according to the prescribed method.

We are sorry to find that the Cinghalese, with many amiable qualities, have the defect of being much addicted, like most of the inferior castes of Hindoos, to thieving;—nor can we account it a merit in them that they execute this with surprising neatness and dexterity. On the whole, however, the description of the island, of its present condition, and its future capacities, is in the highest degree inviting. We would fain join the party in their difficult ascent of Adam's Peak,—and take a share with the Prince in the elephant hunt at Badulla, under the direction of the famous Major Rogers; but must not dwell too long on a single point of the journey.

Neither Madras nor Calcutta seems to have much pleased the travellers. In the "City of Palaces" there was more pomp and etiquette in the social arrangements than was quite agreeable. The heat, also, was excessive; and multitudes of servants, like flies, continually hovering about the steps of the naturalist in the dwelling assigned to the party by the Governor-General, sadly impairs the enjoyment of a few days of rest. Nor could the arid plains of Bengal satisfy eyes that had lately been filled with the voluptuous verdure of Ceylon. In Nepal, whither the party next proceeded, the approach to the mountain region and the glimpse of the mighty Himalaya chain excited a livelier inter-

est: and on returning from thence, a new scene recalling ideas of the time when—

the wealth of Ormus and of Ind  
Heaped on their kings barbaric pearl and gold—

was presented to the traveller on a visit to the Nabob of Oude, at Lucknow. Entering that city, in the dusty costume of wayfarers, they fell in with an impromptu display of magnificence.—

At the turning of a street, a troop of horsemen in armour came galloping towards us, driving the crowd of foot passengers out of their way with loud shouts: a division of the body guard of infantry, with red uniforms and halberds covered with silver, followed these, making the clearance complete. In consequence of this sudden movement, we were thrust so far back into the midst of the confused mob of people, that it became necessary to ply our sticks and elbows lustily. A frightful din, set up by an orchestra of pipers, drummers, and cymbalers, tricked out in the strangest finery, increased the oriental peculiarity of the scene, and announced the approach of some personage of exalted rank. After this advanced guard, there came three huge elephants with brocade hangings on their heads and silver howdahs on their backs. Being now somewhat used to such processions, we did not expect anything quite extraordinary,—least of all, the immediate presence of the Regent, King, or Nabob of Oude, at this early hour. A stout personage, with uncommonly bloated cheeks and an air of the utmost impassiveness, who rode, completely enveloped in cloth of gold, on a lofty Cabul charger, in the midst of a troop of tall lancers in yellow uniforms, blue caps, and portentous boots, was no other, we were told, than the King himself. In the press we had no time to examine his appearance more minutely.

The various splendid mosques, imperial tombs and gardens of Lucknow, and its mere pageant of a court, are vividly described in the Letters. These we must pass over, to give an account of a fiercer exhibition to which the Nabob invited his foreign guests. From a gorgeous repast at the palace, they adjourned to the place destined to the combat of wild beasts, which had been prepared for their entertainment.—

We were conducted to a gallery which commanded a view of a narrow court or area beneath, inclosed by walls and palisades. This was the arena in which the spectacle was to take place. Unfortunately, the space allotted to spectators was so narrowed by the great number of European ladies who were present, that we could only find indifferent standing room, where, in addition to this inconvenience, the glare of the sun was very oppressively felt; but the drama which began to be acted in our sight in the deep space below was such that every discomfort was forgotten in beholding it. We there beheld six mighty buffalos, not of the tame species, but the sturdy offspring of the Arni-buffalo of the hill country, at least four feet and a half high from the ground to the withers, with enormous widely-spread horns several feet long. There they stood, on their short clumsy hoofs, and snorting violently blew out their angry breath from their protruded muzzles as if they were already aware of the nearly approaching danger. What terribly powerful brutes! what vast strength in their broad and brawny necks! It would have been a noble sight, had not their eyes the while expressed such entire stupidity. A rattling of sticks, and the cries of several kinds of bestial voices, were heard—to which the buffalos replied with a deep bellowing. On a sudden, from an opened side door, there darted forth a huge tiger,—certainly from ten to eleven feet in length, and four in height. Without much hesitation, he sprang with a single long bound right amidst the buffalos; one of which, winding his body out of the reach of the formidable horns, he seized by the neck with both claws and teeth at once. The weight of the tiger almost overthrew the buffalo. A hideous combat now took place. Groaning and bellowing, the buffalo dragged his powerful assailant up and down the arena; while the others, with their heavy, pointed horns, dealt the tiger fearful gashes, to liberate their fellow beast. A deep stillness reigned amongst the public; all the spectators awaited with eager suspense the issue of this contest

between the tiger and the buffalos; as well as to the fate of some unfortunate asses—which latter, to increase the sport, being made *perforce* witnesses of the sanguinary action, at first looked down upon it from their poles with inexpressible horror, and afterwards, when their supports were shaken by the beating of the buffalos, fell to the ground as if dead and, with out-stretched limbs lay expecting their fate with the greatest resignation—without making a single effort to save themselves. Two other tigers, of somewhat less stature, were now, with great difficulty, driven in; while the main struggle was still going forward. But no efforts could induce them to attempt an attack of any kind;—they shrank down like cats, crouching as closely as possible to the walls of the inclosure, whenever the buffalos, who still continued, however, to butt at their enemy with the utmost desperation, approached them. The great tiger had at last received a push in the ribs, which lifted him from his seat. He came tumbling down, and crawled like a craven into a corner; whither he was pursued by the buffalo, maddened by the pain of his lacerated neck—and there had to endure many thrusts with the horns, at each of which he only drew up his mouth with a grimace of pain, without making the slightest motion to ward off the attack.

The spectacle was by no means ended here:—other combatants were driven in, and fought with more or less energy. At the close of the exhibition Dr. Hoffmeister adds—

It was a terrible drama,—but for this very reason the more entertaining to the ladies and gentlemen.—After all, there was but one of the buffalos that died from the wounds it had received. All the tigers were still alive:—one of them, only, had a rib broken. The king has in his menagerie sixteen strong tigers, which are kept for combats of this kind.

These lively descriptions, we may repeat, are first impressions, thrown off in haste, for the eyes of private friends, and never submitted to revision or completion afterwards. To this we have already added that most of the journal had to be written at the close of fatiguing days, employed not merely in the ordinary cares of the traveller for his own comfort, but also with the preparations of the collector and naturalist,—and, as we collect from glimpses and hints here and there, in serviceable offices for the whole party. When these circumstances are taken into account, and the work before us is compared with many deliberately completed performances of other travellers, a conclusion favourable to the energy, readiness, and previous training of Dr. Hoffmeister may readily be drawn: and it is natural, on seeing how full of meaning and matter are these off-handed performances, scarcely designed to pass beyond a private circle, to conjecture what the nature of his more finished work would have been had he been preserved to write an account of these travels in the security of his native land.

*Russell: a Tale of the Reign of Charles II.*  
By G. P. R. James, Esq., author of 'Darnley,' 'The Gipsy,' &c. 3 vols. Smith, Elder & Co.

FOREMOST among the historical personages of this story are Lord William and Lady Rachel Russell;—the less exalted characters are those who figure in the somewhat apocryphal roll of the Rye-House Conspirators. For romantic *dramatis persone*, we have a group of rash cavaliers. Their leader is one wicked Lord Alcester, who has wronged a noble lady:—he is watched and kept in order by a relative in disguise, not precisely of the good Mr. Borechell's homely pattern, but masquerading as a juggler, aided by some black men, and performing feats of most wondrous glamour. Would that Mr. James could unearth his sorcerer's mirror for the benefit of the Dobblers, Andersons, and smaller fry of Sprats and others who come in to make mirth and marvels for our small people at Christmas time!—Further, on "Virtue's side" stands "the blue-eyed maid of the cottage,"



who is really a blue-eyed young Lady of good family, turned out in the first page for as serious a chase as awaited the Epping stag of merry memory,—and with regard to whose ultimate destination we were no more uneasy than about the safety of the established City make-sport. She has a venerable father, who has got into political scrapes—and a gallant lover, who is perpetually riding about to achieve brave things. There is also a dashing Dick Myrtle, who has been kept ready made and ready accoutred in our fertile novelist's closet of necromancy ever since we first knew him to be a conjuror. With all these figures and their evolutions every English reader who has enjoyed the advantages of an average circulating-library education has been made acquainted some forty volumes since:—he is less ready, we apprehend, to expect from Mr. James "a Joe" like the following. This, however old it may be to the Million, is new to the *Athenæum*; and therefore it shall close the Critic's catalogue of familiar faces and "properties":—

"The cloudy morning, gradually becoming bright and beautiful, has served as a figure of a thousand things. It has often consoled the baffled expectations of youth; it has often given hope to the wrung heart of parental disappointment. It is recorded that, happily turned by a criminal in a very simple little cloth, it saved his neck from the halter, at a period of our legislative history when that same halter was almost as frequently found round a human as an equine neck. The circumstances, as they are told, are these:—a youth of the name of Lowry—which means in the north, cloudy—happened to take a fancy for some small article which was not his, and appropriated it in a manner which rendered his crime capital. He was one of the unfortunate, which, in the scape-grace interpretation of the word, means a man that is caught in his peccadilloes; and he was brought to trial. Not only was the offence proved, but it was also proved that the youth was very much given to various improper habits; in short, that he was a bad character. It seemed to be the opinion of the lawyers employed to prosecute, that his youth was rather an unfavourable feature in his case, and that, with one who had begun life so badly, the sooner he was out of the world the better. The judge summed up in the same sense; but just when the jury were about to deliberate, the culprit turned the lawyers' point of aggravation into a defence, and exclaimed—

Although my name be Lowry, oh, cast me not away! For may a lowry morning turns out a fine day. The jury resolved to give him a chance of such being the result in his own case; and with the liberal construction of their oath, which we see every day in case of duelling, acquitted the prisoner."

*Pride a Hindrance to True Knowledge. A Sermon preached in the Church of St. Mary the Virgin, Oxford, before the University, on Sunday, June 27, 1847. By Samuel, Lord Bishop of Oxford. Rivington.*

We do not often notice sermons; but the discourse delivered by the Bishop of Oxford at the recent meeting of the British Association is too remarkable as a sign of the times, and too valuable in itself, to be passed over without some mention. Many treatises have been published to show that the advancement of Science is not opposed to the interests of Religion; but Bishop Wilberforce has been the first to point out the true cause of their having been placed in antagonism. "Pride," he says, "is the hindrance to true knowledge." There is no more common form of conceit than the belief in a fancied superior purity of creed,—and all knowledge is rejected which tends to throw doubt on that superiority. The science of Geology is impugned as inconsistent with the Pentateuch; but when we come to examine, we shall find that there is no contradiction between the evidence of the science and the Mosaic statements fairly and freely interpreted.

There is, indeed, great inconsistency between the revelations of Geology and the narrow expositions of the sacred narrative set forth by the great mass of interpreters and commentators; and hence pride in interpretation and pride in comment have masked themselves under the disguise of zeal for the sacred text. It is this pride in unreal knowledge which fills too many high places with the "Skulls that cannot teach and will not learn":—and it is gratifying to find it denounced by an eminent prelate before a learned university. The nature of the humility which is necessary to the acquisition of knowledge is thus acutely investigated and eloquently stated:—

"We are in a world wherein place and true capacity are not one and the same: may, rather where for the most part they are utterly divorced from each other. It is only imperfectly and darkly that we now can know either our own or our neighbour's capacity. We know, or might know, far more of our own weakness, prejudice, narrowness, low-mindedness, than we can know of his. We know, on the other hand, or are ready to believe, far more of our own power than he has ever been able to show us of his. For the intrusive and self-flattering fancy is ever busy in magnifying for us the notions of our greatness. Here then comes in the opportunity for a new exercise of the grace of humility. Now we may, consistently with truth, see that amongst our fellows our true place would be a low place. We may be ready to suspect, that our actual place is not the measure of our capacity—or at least, we may reasonably suppose that almost all have something we have not: have more illumination upon some points—have some peculiar capacities which are not in us; and that so we may in very deed esteem others as better than ourselves, and be ready for and anxious to put them forward and to learn of them."

The pride which is a hindrance to knowledge is not less powerfully described.—

"The essential character of pride is, a high estimate of ourselves; and so, as regards God, it is a loss of the perception of creaturely relation; a spirit of self-dependence, and so of independence. It is a cutting ourselves off from the fountain of being, in a fancied power of self-existence; and towards our fellow-men it is a lifting up of ourselves, thinking highly of what we are, and have, and can do; it is thinking lowly of them, of what they are, and of the light and power which is in them. This, which, when it builds itself up with great materials, is properly pride;—and which, when it uses lower materials for its work of self-exaltation, is that meaner and more despicable vice, self-conceit;—this is the direct opposite of humility. This is that vice against which they have need especially to watch who have made some advances in knowledge and attainment."

Bishop Wilberforce has indicated the true source of this pride with great accuracy, but with more brevity than we could desire.—

"It is universally admitted that the first draughts of knowledge are apt to intoxicate the soul. A deeper acquaintance with the mysteries around him may indeed tend to humble any man, by fixing his eyes on his own absolute lack of knowledge, rather than on his relative superiority. But as he first emerges from the mere level, it is rather with those below him than with the heights which soar far above that he is disposed to contrast his standing place; and so the lowest eminence may swell easily into a mountain, and the half-learned man may be fearfully elated with an amount of knowledge which would seem to one above him to be nothing but a marvellous ignorance. It is indeed a true testimony to man's shameful fall that 'knowledge puffeth up.'"

Vitringa, if we remember aright, states it as the result of his experience in Biblical criticism that men who could only read the Latin Vulgate were offensively positive in their interpretation of prophecy; that those who got as far as the Greek Septuagint became more moderate and cautious; but that those who ascended to the original Hebrew became perfectly modest and almost timid. The aphorism might beneficially be extended beyond Biblical interpretation:—Bishop Wilberforce intimates that it is

equally applicable to all studies relating both to the physical and spiritual condition of mankind. He lays down certain axioms as the basis of scientific investigation; and there are few who will deny that they belong to the foundation of all true knowledge.—

"The axioms which I need for the proof of this conclusion are such as, I doubt not, all here will grant me at once. They are such as these. That all the visible framework of nature, which we see around us, is but the working out of those ideas which were always in the mind of the One necessary Being; the deviser, maker, and sustainer of all derived existence. That He has set man in the midst of these manifestations of his own mind; endowed him with faculties capable of perceiving and examining them; given him a constitution which makes him long to understand them, and even feel it as a painful weariness when their mutual relations, causes, interactions, and conclusions are hidden from his eyes. That He has meant the searching into these things to be a discipline for man's mind, a training of his powers, a leading him on by their regulated exercise to heights which, it may be, he could reach by no other method."

From these axioms it follows that men act contrary to the obvious purposes of their Creator,—that they violate the conditions which He has imposed on their intellectual existence, when they yield implicitly to authority and refuse to investigate evidence. Now, it is a curious but rarely noticed fact that the men who are most proud of their knowledge, and consequently the most positive in their assertions, are precisely those who have acquired their information at second-hand, and who have adopted the sentiments of others without any labour or research of their own. It was of this that Episcopius complained in the Arminian controversy, when Calvin's Institutes were triumphantly adduced against him.—"Alas!" said he, "is it not sad to see men take more pride in the sentiments of others than in their own?" We will now quote the Bishop's admirable description of the operations of pride as a hindrance to knowledge.—

"For the discovery of truth, it is needed that the facts of nature around man should be questioned by his intelligence. For this questioning, the first of all conditions is, that he should have those facts clear, defined, separated from others, ascertained in themselves. That he should so have studied them as to know their true relations, to see through seeming resemblances, to catch the scattered hints which declare, in the midst of apparent dissimilarity, real connection; to see the value of a fact, which, having been arbitrarily thrust from its true place, has seemed hitherto a perplexing superfluity; that he should thus have plain and clear before him the elements of which the insight of his highest reason is to suggest to him the law. Now, for all this the very first mental qualification which he needs is patience; a patience which will steadily refuse to taste prematurely the pleasure of generalization, which will sustain him through the longest, the most wearisome processes of minute investigation. And to this first condition of successful study, pride is the direct antagonist. The pride of ignorance is, we all know, most impatient; it gathers up the merest external resemblances, and then generalizes at a grasp. And very little removed from this state is the impatient man, be his actual attainments what they may. His own thoughts, his own impressions, his own fancies, these are the facts of the self-sufficient. He cannot endure the slow laborious processes to which the student of nature must submit. Nor is this all: there must be an ardent love of Truth as Truth in him who would so persevere as to follow her guidance up the steep path which alone leads to her secret dwelling place; and with this, too, pride interferes. He who dwells upon or looks for his own exaltation, will soon have in all his studies another and a lower aim than the discovery of truth. Not what she will reveal, but what will do him credit, will become the secret law of his motives; and to such a tempter soon become familiar short paths and little ends, and tricky means which lead not to her seat, and to which she will not yield her hidden store. At another point again he is weakened. He

only who will be indeed a learner can be greatly taught; and to be a learner the proud man will not bow: he will not learn of others, for he looks down scornfully upon them, and scorn is no learner in any school. He wastes the rays which would have enlightened his eye, not believing in the light of other men. He will rather repudiate the richest inheritance of transmitted knowledge, than acknowledge even to himself what he receives from others—and on such a mind there soon settles down the thicker darkness, which is bred by all the storms of envy, captiousness, jealousy, and hatred. And as he will not learn from others, so not even by Nature herself will he be taught. He thinks he knows so much, that his estimate of what is to be known is lowered. And this is not the spirit of a learner: he grows to deal boldly with Nature, instead of reverently following her guidance. He seals his heart against her secret influences. He has a theory to maintain, a solution which must not be disproved, a generalization which shall not be disturbed; and once possessed of this false cypher, he reads amidst all the golden letters around him."

The tendency of scientific studies rightly directed to lead man "through Nature up to Nature's God" is lightly, but efficiently, touched by the philosophic preacher; and as he delivered the passage, most of his hearers could not resist the conviction that he depicted the experience of his own individual mind.—

"Beautiful as Nature is, thrilling as are for the listening ear the notes which Science strikes, there is for man's spirit no rest in them. Every step leads on the unsatisfied inquirer to one beyond itself. The nicest mechanical arrangement of the particles of matter does but force us to contemplate those subtler powers by whose action magnetic relations and chemical affinities are next developed. Exhaust their range, and still there lies palpably beyond them the mystery of vital powers. Follow that to its highest source, and still we have but reached the first limits of those mightier energies, of reason, conscience, and will, of which we feel within ourselves the living action. And here, where the darkness which may be felt presses most heavily upon the inquiring soul,—here, in seeking to know the Cause of causes,—here, in seeking to find out Him without whose real personal being all nature round us would be a juggling show, and we ourselves to ourselves a hateful paradox,—here alone can there be any rest for that mighty spirit, fallen though it be, which the Creator has breathed into the race of man. Creation is not wide enough to satisfy his soul. Not all its precious balms can cleanse or heal his deepest wound. Only on Him who made him can any son of Adam rest at last the burden of his awful being. And from Him the pride of independence must ever separate the fallen creature.

We have rarely seen the character of a Christian philosopher so finely delineated as in the following passage.—

"The eye which is turned inward on this abyss of weakness, whilst it must see far less of the infirmity of others, will not be easily deceived by those painted shows of the fancy which tempt us to think great things of our relative capacity or worth; and thus the being truly lowly before God will make us in our inward thoughts humble towards men. And so shall we be kept through His grace from the narrowing circle, and the lessening light, and the thickening darkness which gather round and hem in the proud in spirit. For thus shall we be eminently receptive of all lights which God shall pour on us. The mists which hang upon the mountain top descend not into those low valleys. In them the eye is clear from the disturbing images, the ear is empty of the distracting voices which throng and echo round the self-sufficient. The soul takes in the vision of God Himself, and of all truth as flowing from Him. The impress of His hand in nature comes out clear before such a watcher: *being*, in his highest unity, as the simple effluence of the loving energies of the undervived necessary will, is clear before him; the relations and analogies, the laws and purposes, of nature open themselves out to him; always and from all sources he is a learner—from God directly, and from God through man: on his brother's soul a light withdrawn from his own may indeed have fallen, and from the weakest he may learn what till

now was hidden from himself. Past attainments, present knowledge, become to such an one the occasions of a deeper self-abasement; all he does see, makes him but perceive the unmeasured greatness of the world beyond his reach. The temptations of the half-learned have almost ceased to visit him. On his soul has settled a sense of vastness into which he cannot penetrate,—of light in which he hardly shares,—of progression all but infinite, of which the first stumbling steps are all which he has tried. He would fain be led by that Hand which spread around him all this wonderful scene of nature, and which is over him for purposes of mercy infinite; and thus the increase of his knowledge becoming to him but an increase in his consciousness of ignorance, he is driven by it closer to the personal God."

The sentiments which we have quoted bespeak at once the Christian prelate and the enlightened philosopher,—and they were peculiarly appropriate to the time and place in which they were delivered. Oxford has done much for ancient learning, and is doing much for modern science. The lovers of the former have been accustomed to look with some feelings of jealous apprehension on the thriving growth of the latter:—but we trust that the jealousy will be calmed and the terror allayed by the able exposition of their co-incidence given by a prelate of whom the University is justly proud, and who unites in himself the solid acquirements of a profound scholar and the attainments of an experimental and investigating philosopher.

*Norman's Bridge; or, the Modern Midas.* By the Author of 'Emilia Wyndham,' 'Two Old Men's Tales,' &c. 3 vols. Bentley.

THAT the 'Two Old Men' never tell tales save in earnest the *Athenæum* has again and again had pleasure in pointing out. They have rarely, if ever, laboured more heartily than over their present task. To speak more plainly, this is one of the most powerful novels of a very powerful writer. Perhaps among all our passions and appetites, none has been more successfully treated in fiction than the desire of heaping up riches. In the remarkable library of modern French fiction (and very remarkable it is, with all its acknowledged defects, extravagances, and vices) Balzac's 'Eugenie Grandet' stands in the foremost rank. Our authoress does not equal her contemporary in the conduct of a story. She is apt to lay her plans so widely, and to bestow so much care and pains on the commencement of her novels, that not only space, but patience too, seem to fail her ere she reaches their close. 'Norman's Bridge,' for instance, is a family history embracing three generations:—delightfully minute and precise in its earlier chapters, but becoming breathlessly rapid, not to say fragmentary, as the catastrophe is approached. Yet, though the lady who writes as 'Two Old Men' wants the artistic continuity of the French novelist, Balzac himself has executed nothing more striking or more delicate than some of her traits and shadings of character. Though she indulges in episode and digression, she rarely forgets her main design;—nor, like ninety-nine out of the hundred of those fancying themselves moral novelists, does she give us, in place of men and women, monsters comprehending the most incongruous attributes—who pass from the blackest vice to the most brilliant virtue when a stage effect is wanted—and who are lessoned and rewarded on the principle which ranting preachers love to enforce, or that which Leadenhall-street Scheherazades delight to illustrate. She is alike clear of "poetical justice" taking the form of direct and visible retribution and of fairy prodigality indiscriminately plastering with peace and plenty "all sorts and conditions" of men—merely to spare her good-natured readers one retrospective heart-ache. The winding-up of 'Norman's Bridge' will be severely canvassed, especially

by old-fashioned novel readers:—and, indeed, we cannot but suspect, that it may have been a surprise to the writer herself, who suddenly saw a conclusion for which, however inevitable it was, she was not wholly prepared, and for which, therefore, she had not sufficiently prepared her readers.—We are not going to destroy their pleasure by pointing out what many besides ourselves will have expected. Here is the right solution; but it would have gained in impressiveness had we seen it afar off, in place of its bursting upon us unawares.

'Norman's Bridge' is the history of an enormous fortune amassed by a Scottish shepherd's son, whose ambition brings him to England. He sets forth on his pilgrimage with one of the most admirable and sweetest wives ever created in the novelist's heaven of pure and beautiful inventions, to minister to a selfish man. Something of her nature, perhaps, may be divined from the following description of their departure: though we give it for its general truth, feeling, and simplicity, and not merely because it contains the "study of an angel."

"It is now one fortnight after the wedding, and it is time they should set out. It is a sweet morning in July. The sun has just risen upon the hills, and is gleaming brightly over-head. The whole village is up; the sound of rural preparation for labour is heard upon all sides. Every thing looks as cheerful as it is possible to conceive. There is quite a little party assembled at Duncan Bell's. All Mary's family is there. But as for Michael, he had neither kith nor kin; not one person in the world did he call cousin with Mary's married sisters and their husbands, and all their little ones, are taking the last meal which, under the old man's roof, they are to share together. It is a melancholy repast, as you will easily believe. The poor old woman sits upon the settle by the fire; her hand supports her head. She is moaning softly but endeavouring not to moan aloud. In vain; Mary has hold of her hand; she does not think of breaking. 'But, mother, you shall hear of us from Glasgow, make sure, before we go to sea; and from Bristol as soon as we arrive. Michael is an excellent penman; and thanks to our good Minister, you know, I can write tidily enough; and I'll tell you all about this bra' England we're going to; and think ye how yell like my letters!' \* \* \* 'The sun is getting high,' said Michael, at last rising from the table. 'Mary, my dear, it's time to be thinking of setting forward.' There was a general movement and bustling about, and getting Mary's things together, and putting on Mary's bonnet; for she was not to travel bareheaded, like a mere Scotch lassie, but like the future land clerk's and presumptive partner's lady; and her sisters had insisted upon a bonnet. And then Mary retired to pull off her shoes and stockings, and fold them neatly and put them in her pocket; and she came in again in her neat, compact dress, her plaid fastened with a large silver brooch, her bonnet upon her head, and her feet bare, with the tears standing in her eyes—but not falling, for Mary was never known to sob and cry. And now, with a most gentle composure, but with a manner so feeling and sweet that it was impossible to mistake this composure for indifference, she began to kiss and take leave. The old woman cried like a child as she pressed her to her heart, kissed, and blessed, and prayed for her aloud. The old father's expression of feeling was more grave and solemn. He laid his hand upon her head, and uttered a fervent prayer—according to the patriarchal custom of those days—while all stood unbosomed around him; then there was kissing and blessing of sisters and brothers; last of all it was the Minister's turn. He had been standing some little way apart. \* \* \* Michael came up and took Mary away. He had a sort of knapsack strapped over his shoulders, in which was their little provision of wearing apparel. According to the simple custom of that time and that rank, the husband walked out first, and the wife followed after. There was no arm-and-arm walking to go on between them. Self-sustained he left the land of his fathers to fight his way through the world; and self-sustained she followed. The whole company crowded to the outside of the door to watch their departing steps. They went down the road that



led southwards. Neither of them turned back to look. Michael's heart and thoughts were already speeding forwards upon the way which opened before him; but his partner!—She had gone through the parting with the composure so habitual to her; but at this actual severance, she felt as if her heart was breaking. It seemed to sink and die within her. She had just strength to follow. But for worlds she would not have looked back. Now they are receding. That little hillock covered with gorse bushes and a ragged thorn or two, hides them. Now they emerge again by the side of the twinkling burn. He is still walking first, and she following. They neither of them look back. She has nothing of that sort of irresolution about her: her part is taken, she will not look back: much less will he."

Nothing can be more to our liking than the entire history of the settlement of the young Scot and his wife in the English town. Our authoress commands, beyond most writers, a knowledge of English provincial life at the beginning of the century; while she possesses that skill of hand and that true eye for the picturesque which can make even the interior of an ironmonger's shop attractive, by its quaint character, its struggling lights and deep shades. Ere, however, we are introduced into such a scene with Michael for its master, Mary has suffered much. Not merely has her husband's avarice subjected them to frightful domestic trials,—but the gradually acquired knowledge of it has shut up her confidence in him, and planted in her heart a reserve and a sorrow past the power of wealth to gild over. She has before her, in their son, a living witness to the father's parsimony. By nature ungracious and sullen—denied the correction of a genial education—driven by tyranny into marrying a silly wife as a measure of self-assertion,—John Grant's grumbling and moody unhappiness is one of those slow daily trials to the sight which eat away the heart's life. But (in this truer to nature than M. Balzac, who allowed the avarice-ridden household of Père Grandet no compensation) Mary has one blessing in the midst of all this dreariness—John Grant's daughter, little Joan; on whom, of course, the future interest of the tale centres. We will not say that she is preternaturally noble and great and wise,—having seen how wonderfully Truth and Honour may assert themselves even in childhood when but a crevice of inlet is afforded to them; but her character is pitched from the very first at a celestial height, and maintained at the same till the last page of the book. We cannot refrain from another picture, full of contrast and colour: and which, moreover, with every experienced novel reader, will give us the labour of sketching the course pursued by the heart-fortunes of the ironmonger's heiress.

"She was just nine years old,—an age when the intellect of a child of this description is much more advanced than those unaccustomed to observe children are probably aware of,—when the new inhabitants of Widdrington House left Scotland, and came down to this remote county to take possession of their inheritance. It was upon one of the few bright days of that strange summer, and a hot, fervid sun was now beating down into the street, filled as usual with villanous smells and villanous sounds; the carts were rolling, as usual, heavily along; the dustman's bell, as usual, tinkling; the old crier uttering his discordant and unintelligible announcements; people were bustling about, and coming in and out of the shop; and the child was standing leaning against a heap of rope, looking out at the sun and longing for fresh air upon that sultry day,—when there was a sudden stop, and sort of bustle more than ordinary amid the drays, and a hurried standing up out of the way of the passer-by. Something unusual was actually approaching. Presently a splendid carriage, a landau and four, was seen advancing up the street, with its gay positions in scarlet and silver, mounted upon noble prancing horses, whose coats shone like satin, in the sunbeams, as they proudly curvetted in

a grand, disdainful manner, among the horrible dirt-carts, the ponderous waggons, and heavy drays with which the thoroughfare was thronged. The child ran to the door to look at the beautiful and novel spectacle, and gazed upon the gay display with feelings of the most exquisite delight and admiration, which suddenly changed to something almost approaching to awe and terror, when the splendid equipage was seen to draw up before the shop-door. Joan retreated from her post as suddenly as she had advanced, and hid herself in the corner of the angle formed by the open door, the upper part of which being glazed, she could look at and watch this glorious apparition unperceived. Did anything ever appear so beautiful to her childish eyes as that elegant carriage lined with white cloth, and with scarlet, and white lace to match the liveries! The hood was thrown back, and the pannels were covered with a splendid coat of arms, emblazoned, as the mode then was, upon an elaborate scarlet and ermine mantle adorned with gold cordings and tassels; the carriage was also much ornamented with silver mountings; so was the harness and all the other equipments, and large rosettes of scarlet ribbon ornamented the horses' heads; even the very whips which the handsome young postillions flourished, as they disciplined the high-spirited bright bays they rode, seemed bright and beautiful objects in the eyes of the young girl. Altogether the equipage contrasted most charmingly with every other object around; and appeared to her infinitely more beautiful than anything she had ever, in her life, seen before. Screened from observation by the door behind which she had hidden herself—her great black eyes fixed in steady observation—little Joan watched in mute attention everything that went on. In that carriage—and not the car of Juno herself, heaven-descending, ever appeared more beautiful in the dream of the painter or poet, than did this carriage from Houlditch or Leader's to the eye of the little being before us—in this magic car there sat a lady and two young children. The lady was dressed in a hat of white chip, ornamented with delicate feathers and ribbons tipped with pink, and had on a pelisse of fine, clear sprigged muslin, lined with some delicate rose colour, and trimmed with a profusion of very fine lace.—By her side sat a little boy, dressed in a short jacket and trousers, who looked very pale and sickly, though his cheeks were fat, puffed, and large.—Joan thought him as ugly as she was herself; and upon her lap was another child, about two years younger. A large black hat, with an immense full black feather, half shaded the infant face; under it was a large, and as she thought most beautiful, rosette of blue ribbon. His dress was a white frock with a broad blue sash, beneath which his lovely little naked legs, in their short socks and charming tiny shoes with little silver clasps, were seen. He had a little blue scarf tied round his neck; his round infant arms from under his short sleeves were bare, except that a pair of little gloves, richly embroidered in blue, reached half way to the elbow. Such was the picture which appeared to our observant and enchanted little girl. Never in her life had she seen anything in the least to be compared to the exquisite beauty, as she thought it, of all these things. The sweet face of the lady—who had blue eyes, light brown hair, and a delicate colour in her cheeks; the beauty of that beautiful, beautiful baby boy, with his large grey eyes, his little pointing, rosy mouth, and his infant curls falling down in profusion about his neck of alabaster; all this united to the soft colours and folds of their dress, filled her with a pleasure approaching to rapture. Was there ever upon earth anything so charming? No;—this must be the way the angels looked! It is impossible to describe the delight this vision gave to the child. Few look back or recollect much of the sensations of their early childhood, or they may remember the intense delight which the sense of the beautiful at that time afforded."

At this opening of Faëry land to her, Joan's grandfather was but on the threshold of his *El dorado*. The ironmongers shortly after became a speculator in corn,—and (those being days of famine and riot) the object of popular odium. His house was attacked—and his life saved by the husband of the beautiful lady: who, also, during

this time of terror, became acquainted with the rare and simple bravery of little Joan. This is described with a force akin to that which, in 'Father Darcy,' pictured the walk of Grace Vaux with the martyrs to the stake; We will not forestall the reader's interest by extracting any part of the great scenes: but here is an episodic picture,—which its entire difference from the two already given, will make welcome. The narrator is speaking in her own person of the corn riots at the beginning of the century.—

"Shall I ever forget that night at Sheffield, in the latter end of October, 1800? What a dark, lowering evening it was! How low, heavy, and black, hung the leaden clouds, suspended over all that country of iron! We dined at a place called Black Barnsley, upon such iron food as the best inn of the place afforded, in a little, black, gloomy, dirty room, looking upon a grim, narrow, dismal street. After dinner we went on to see Lord Fitzwilliam's fine place, and as we entered the park met Lord Fitzwilliam, in the uniform of the corps of Fencibles he commanded, galloping out of his park, followed by his ordinary. We saw the house, and the beautiful park; the groups of deer, the groves of trees—the magnificence—the repose of the scene, undisturbed by what was going on so near it. We then took our way to Sheffield, ignorant of what was before us. I was a child small enough to stand up in front of the carriage then. As we proceeded, mysterious questions were put by the post-boy to the people he met on the road at the turnpikes. 'Are they out?' 'Which way are they coming?' All agreed 'they were out;' but which way they were coming, no one seemed to know. The way lay pleasantly enough at first, through broad highways, between tall hedge-row trees and fruitful fields; but soon we began to enter what seemed to me a pandemonium. Tall, dark, terrible-looking buildings, whose huge chimneys vomited forth torrents of smoke; steam-engines roaring and hissing; blackened walls, blackened houses, blackened people; the dark, lurid, heavy sky; the mysterious terror of—I knew not what—which seemed to fill every one; my little heart was trembling with vague apprehensions. Suddenly, in a large, open court before one of these awful, lofty, black buildings, looming high against the sky, stood a gibbet—a black, ink-black gibbet, and upon it was hanging the body of a man—of the murderer,—black as the beam from which he hung. We were so near I could distinguish his hat, his dress. It is forty-seven years ago; but I see it as plainly now as I did then. So do I still see those streets of Smeaton which we soon afterwards entered, filled with a dark, thickening sea of faces, heads of ruffian-like men, shocking-looking women, boys, and children, all squeezed together in a dense confined mass, shouting, screaming, howling, threatening, as our post-boy, with much precaution, endeavored to make his way through the swaying, heaving multitude. We turned into the principal street;—there sat a detachment of Lord Fitzwilliam's Fencibles, in their scarlet jackets and small compact helmets, immovable as statues, in the midst of the agitated and threatening throng. Further on, the Oxford Blues, I believe they were, mounted on heavy black horses were seen drawn up, wearing large three-cornered hats, with immense cockades of black ribbon, long blue coats turned up with yellow, huge heavy boots and yellow leathers;—they sat with an aspect still more imposing, in the same motionless attitude of military discipline;—the people surging in thick masses around them, and completely filling the street. The inn-yard into which we drove was filled with these black heavy horses and their awful-looking riders. I have never since seen any regiment which appeared to me to carry so imposing an appearance. I remember now the terror these enormous black horses filled me with, as they pushed up and down close against the carriage. It was getting late, and there was no moon. But I see now the landlady, a pretty, gentle-looking young woman, pressing behind the horses' heels, opening the door of the carriage, and saying that she did not think it safe for ladies and children to stay in the town that night, and recommending us to go on to Chesterfield. Horses were immediately put to the carriage, and without alighting, we once more drove through the crowd, saluted with oaths and curses,

shrieks, and howlings, as the carriage made its way along."

To return:—between the families of the Scotch lord and the Scotch speculator (who from a corn-dealer becomes a banker) intercourse grows up and money transactions are undertaken. The reader has been shown enough to assure him that the heart of Joan is staked, among other possessions:—but we are not going to reveal the issue of either the love or the lucre risked. The latter part of the record is more fragmentary, as we have said, than its opening: the fatal limitation of three volumes co-operating unfavourably with the impatient genius of our authoress. For ourselves—were the times twice as busy—we could sit to hear her tell a family story, such as the one we leave reluctantly, if it ran to the length of 'Sir Charles Grandison.' We are less sure, however, that she could sit to tell it.

*The Protector: a Vindication.* By J. H. Merle D'Aubigné, D.D. Edinburgh, Oliver & Boyd.

THIS work is, in fact, an extended Review, by Dr. Merle D'Aubigné, of Mr. Thomas Carlyle's collection of 'Oliver Cromwell's Letters and Speeches.' The words of such a critic are not indifferent, however disputable. The undertaking in his hands has assumed almost historical dignity;—in fact, in a great measure he perfects what Mr. Carlyle left inchoate. He has combined the materials and deduced the results which the original editor had abandoned to inference and hazard. Dr. Merle D'Aubigné is, indeed, ultra-Protestant in his opinions,—and looks at his subject in a narrower spirit than that which animates Mr. Carlyle. Cromwell is with our critic-historian an incarnation of Protestantism. This is the principle which is to guide us through his argument,—the key-stone of the arch which Dr. Merle D'Aubigné, out of the materials accumulated by Mr. Carlyle, has sought to erect.

Cromwell appeared at a great historical crisis—when Popery was waging war against the British islands. Charles the First was its victim,—“for Popery ever destroys both the princes and the people who espouse it.” The *Stuarts* and the *Bourbons* equally exemplify this truth, according to Dr. Merle D'Aubigné. The fearful commotions and sanguinary conflicts consequent on the great contention of the seventeenth century were, in our author's language,

—“like the shakings and shuddering of the earth, in a country threatened with conflagration by subterranean fires. If a traveller in self-defence slays a highway robber, the responsibility of bloodshed does not rest on him. In ordinary times his hand would have been pure from its stain. War is war, and calls, alas! for blood.”

We have now stated the principle and argument of Dr. Merle D'Aubigné's book. Oliver Cromwell was a “traveller put on his self-defence.” We may wish that the revolution in which he was engaged had been “a rose-water one;” but in the nature of things this could not be. That it was otherwise, was not the fault of the individual, but the law of the epoch. No doubt, in Cromwell's case, as in many others, great errors were united with great piety:—but he was at least no hypocrite. Milton has left a character of him such as he appeared to our great poet “during the nine or ten years of obscurity and seclusion that intervened between his marriage and his obtaining a seat in parliament:”—

“He had grown up in peace and privacy at home, silently cherishing in his heart a confidence in God, and a magnanimity well adapted for the solemn times that were approaching. Although of ripe years, he had not yet stepped forward into public life, and nothing so much distinguished him from all around

as the cultivation of a pure religion, and the integrity of his life.”

Dr. Merle D'Aubigné is anxious, seeing that Mr. Thomas Carlyle has already portrayed Cromwell as a hero, to exhibit him specially as a Christian.

Consistently with these premises, Dr. Merle D'Aubigné earnestly reminds his readers that Cromwell's first public words were uttered in Parliament against the re-establishment of Popery—that the rest of his life was consistent and faithful to this one idea—and that he was conscientiously devoted to the cause which represented it. The ruin of the throne was inevitable. The English revolution proclaimed the illegality of absolute power:—but that had been proclaimed before. The commonality of the seventeenth century herein only repeated what had previously been enacted by the feudal aristocracy. By this fact we are to measure the degree of social progress then achieved.

Cromwell, says Dr. Merle D'Aubigné, was forty-two years old before he was called into active service.—

“Oliver now (1642) exchanged his parliamentary career for another that had become more necessary. The Huntingdonshire yeoman, who had given the Commons some proofs of his eloquence, was about to astonish the army still more by his courage and genius. The fervent orator was now to show himself a great general, and to become one of the greatest statesmen of modern times. On the 7th of February, Cromwell contributed 300*l.*, a large sum for his small fortune, towards the salvation of Protestantism and of England. He then joined the parliamentary army with his two sons, respectively twenty and sixteen years of age; and shortly after raised two companies of volunteers at Cambridge. The departure of his sons Oliver and Richard must have caused great sorrow in the peaceful abode of the Huntingdon farmer. With difficulty could these young men tear themselves from the embraces of their mother and of their sisters. But the hour was come when their country called for the greatest sacrifices. All must now be prepared either to stretch their necks to the sword, or to bow them beneath the yoke of the Pope. Cromwell's domestic society was a pleasing one; he had a wife whom he loved most tenderly; his good mother was still living; he had passed the age of ambition; yet he became a soldier. ‘You have had my money: I hope in God I desire to venture my skin. So do mine,’ said he, with noble simplicity, on a later occasion. For the space of seventeen years from this day until that of his death, all his thoughts, however well or ill conceived, were for Protestantism and for the liberty of his fellow-citizens. It is from this moral point of view that we must study Cromwell; this was his ruling principle; and this alone explains his whole life.”

Having recently [*vide Ath.* Nos. 945, 946, 947, and 973] gone through Cromwell's history, we cannot be expected now to retrace it. We take from Dr. Merle D'Aubigné's book such passages as have principally excited our attention on perusal. What the author most insists on is the sincerity (though not always the sobriety) of Cromwell's views. He brings as its first proof the remarkable constitution of Cromwell's troop of “Ironsides:”—and as its second, the acknowledged invincibility of his military genius. The key to this kind of superiority is furnished by Milton:—

“From his thorough exercise in the art of self-knowledge, he had either exterminated or subjugated his domestic foes, his idle hopes, his fears, and his desires. Having thus learnt to engage, and subdue, and triumph over himself, he took the field against his outward enemies, a soldier practised in all the discipline of war.”

One advantage Dr. Merle D'Aubigné's book has over that of Mr. Carlyle:—the former gives the portrait of Charles as well as that of Cromwell. What help does the following extract lend to a right apprehension of the subject!—

“On the 14th of June the decisive battle of

Naseby, so fatal to the royalists, took place! The king fought desperately, but lost his private cabinet of papers and letters, which was sent to London, where it was carefully examined by the parliament. In it they found the clearest proofs that, notwithstanding his frequent denials, he was perpetually soliciting the aid of foreign princes, and that he had protested against the name of Parliament which he had given to the two Houses. These documents, which were published under the title of ‘The King's Cabinet Opened,’ entirely ruined Charles in the minds of his people. There is a justice in heaven which permits neither kings nor the humbles of their subjects to live by falsehood and to make a mockery of oaths. By this deception and perjury Charles had forfeited the respect of many who were desirous to maintain the dignity of the throne, and from this period no hope remained.”

The Independent influence having supplanted the Presbyterian in the House of Commons, Dr. Merle D'Aubigné again exhibits Charles:—

“At first they showed themselves well disposed towards Charles, and Oliver made a most temperate use of the power which the course of events had placed in his hands. One of his cousins, John Cromwell, had heard him say at Hampton Court: ‘I think the king the most injured prince in the world, but this—touching his sword—shall right him.’ He shrank from a revolution: he sought to prevent it, and to re-establish his sovereignty in the enjoyment of legitimate authority. Everything shows that he was sincere in this desire. ‘May God be pleased to look upon me,’ said he, ‘according to the sincerity of my heart towards the king.’ He did not as yet despair of Charles, and he desired to save this prince not less from the excesses of his own despotism than from those of the Levellers. This even the prejudiced historian of the *Four Stuarts* seems to acknowledge. Oliver and Ireton had frequent interviews with the king and his agents, and the propositions they made were, in the actual state of affairs, very equitable. Parliament had required that the royal authority should be limited for twenty years; Cromwell asked for ten only, and declared that the king's conscience ought to be left free as regarded episcopacy. Sir John Berkeley, one of Charles's attendants, entreated him to accept these terms; and hence, for some time, strong hopes were entertained of a pacification. Cromwell's wife and daughters were presented to the king at Hampton Court, where the latter received them with great honours. Even the General himself and Ireton were seen walking with him in the Park, and were known to be often clothed with him in this monarch's destiny to be the contriver of his own ruin. The graciousness displayed at Hampton Court was mere treachery. Misled and perhaps excited by messages from France, conveyed to him by Mr. Ashburnham, the king rejected the most favourable offers. ‘I can turn the scale which you I please,’ said he to his agents; ‘and that party must sink which I abandon.’ ‘Sire,’ replied Berkeley, ‘a crown so near lost was never recovered on easier terms.’ Charles in fact did turn the scale, . . . but to his own destruction.”

Such passages supply here what was greatly wanted in Mr. Carlyle's volumes. The fault of Dr. Merle D'Aubigné's own book is its sectarian pietism. He does not, however, appreciate the mysticism of Cromwell's captains,—and arrives at no very philosophical understanding of its phenomena. There is, notwithstanding, in his review much sound reasoning and pleasant rhetoric.

Dr. Merle D'Aubigné condemns the execution of the King as a crime,—but one equally chargeable on France and Spain as on England. The Irish massacre, however, he vindicates,—though he declines to justify it. Therein Dr. D'Aubigné admits, Cromwell acted out of character—that is, on the principles of the Old Testament rather than those of the New,—but he was mistaken, not criminal. This is an argument that will scarcely satisfy any party. Cromwell's domestic character receives deserved eulogy from his biographer.

The life of Cromwell has, however, yet to be worthily written. Such publications as this and



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Mr. Carlyle's are but tentative processes towards the composition of a work the absence of which will soon be felt as a national want.

*Selections from the Records of the Kirk Session, Presbytery, and Synod of Aberdeen. Printed for the Spalding Club.*

There is a very curious collection of extracts, in spite of their general dulness, and the extreme prolixity of many of them, for the numerous illustrations afforded of the state of society in the northern parts of our kingdom during a period when England and the South of Scotland were one wide religious battle-field. The selections relating to the kirk session—and which form the most interesting portion of the book—are taken from the first five volumes of records. "It is to be regretted," says the editor, "that various gaps occur in this series,"—for unfortunately they happen at some of the most important periods. Thus, the record from 1578 to 1602 is wanting; and that also from 1640 to 1651,—which doubtless would have afforded interesting illustrations of the progress of the parliamentary war and of parliamentary principles in the north. The record of the presbytery extends only from 1598 to 1610; while that of the synod begins in 1651 and is continued to 1681. "The principle on which the extracts now printed have been made," the editor remarks in conclusion, "was to select those entries which served to illustrate the history, the prevailing opinions, and general state of society, of the various periods over which the records extend; and where there were many entries of the same nature and relating to the same class of subjects, to prefer a specimen which might be considered as most interesting."

The records of the kirk session begin as early as Nov. 1562,—scarcely more than two years after the publication of 'The Confession of Faith and Doctrine Professed and Believed by the Protestants within the Realm of Scotland;' and details the measures taken by the minister, provost, elders, and deacons, "that gud lyfe, conversation, and maneris may scheyne, and the rotin, poysonit, and filthy flour of wyces and vices may be wed owt and pluckit wp be the rotin." Among these "wyces," swearing, evil-speaking, and disobedience "of gude order and rewle" appear very prominent; and for such, "dowkyng" and the cuckold seem to have been considered the most efficacious remedies. An entry that all common scolds and "hardis" shall be banished from the town shows that the "gentle craft" of minstrelsy found no favour in these reformers' eyes. Orders were, about the same time, given to the various crafts to "remove all superstition and occasion thairrof in keeping of any holyday;" and to the masters of the free school prohibiting their keeping of those "days dedicated to superstition in papistrie." Under such stringent rule, deprived of their holidays and their merriments, it is not surprising, we think, that men blasphemed the kyrk. "This we find one Andro Philpoun did; who thereupon was ordered to ask pardon publicly in the kirk,—the magistrate being desired, besides, "to punish him civilly."

Old habits and old customs will not, however, yield forthwith to Acts of Parliament, or even to acts of the kirk:—so for years, even for generations, we find the people adhering to their old customs at Yuletide and Midsummer and such like. Even as late as 1608, more than twelve persons, many of them among the principal inhabitants of Aberdeen, are accused before the session of that most ancient superstition, lighting the Beltane, or Midsummer-Eve fire, on the causeway before their doors.

In the more northern parts of Scotland

"pure presbytery," as Robert Baillie would express it, did not long maintain its hold; and at the beginning of the seventeenth century Aberdeen had a bishop, one "Maister Peter Blackburne,"—for "lords bishops" were not as yet. The inhabitants, however, seem to have been as sharply looked after and as rigidly coerced as in any presbytery throughout Scotland. Thus, a bailie and two of the session are directed to pass through the town every Sunday, and note those whom they may find absent either from morning or afternoon sermon, in order to their punishment. Orders are also given that such of the inhabitants of Futtie who came not to the communion should pay a double fine. Persons were enjoined to attend the week-day preachings as well as the Sunday's,—to hear all the sermons preached in their parish church,—and that those who can read shall "lerne to sing and praise God publictly." The measures that were taken to enforce the last rule are, unfortunately, not specified; nor is the name of the Aberdeen Hullah who was to drill the whole reading population into psalmody given.

The following is worth extracting:—

"Also, it is statute and ordanit, that the division alreddie maid of the toune in parochinis be observit and kept in all tyme cumming, and that ilk parochin resort on the Saboth day to thair awin parochie kirk, appoyntit and designit vnto thame, viz.: The Evin Quarter and Futtie Quarter to resort to the New Kirk as thair proper parochie kirk, and the Cruik Quarter and Grene Quarter to resort to the Auld Kirk as thair proper parochie kirk, conforme to the act of counsall maid thairinait befor the tyme of the division of the burght in parochinis. The samyn day, the session ordanis it maist necessar, statutes and ordanis, that all men and women in this burgh quha can reid, and ar of famous report and habilitie, sall have bybles and psalme bukies of thair awin, and sall bring the same with thame to thair parochie kirks, thairon to reid and prais God, conforme to the actis of parliament maid thairinait. The samyn dry, the session ordanis that all women of this burght, of honest reputatioun, quha ar of habilitie to have stultis, sall everie one of thame have stultis in the kirk, to sitt vpon in time of preaching and prayeris, conforme to the act of counsall maid thairinait, quhillk thay ordane to be done within fourtie dayes after the dait heirof; and ordanis intimation to be maid herof, and of the remanent statutes aboue writin from pulpitt, and that the said fourtie dayes being bypast, the haill sessis for women afor the daskis salbe takin away be the maister of kirkwarck."

The right to a joint-stool in the kirk was, therefore, somewhat for the women in the good town of Aberdeen to be proud of; but little did the bishop or his coadjutors dream of the use to which Janet Geddes and her companions would in aftertimes put them. Curious entries follow, prohibiting children from wandering up and down the church during the time of worship, and enacting that they shall be "keepit at hame;" and also against any of the congregation bringing dogs with them to the Service,—the penalty being four shillings. The bringing of dogs to church, however, seems to have been a favourite custom of the Aberdeen people; for as late as 1640 we find an entry,—"whereas both men and women bringes with thame their dogges to the parrouche kirks, whairthrow, and be the barking and perturbation of these dogges, the people often ar withdrawn from heiring Gods word, and divyn service is interrupted," it is enacted that forty shillings shall be paid by each person so doing,—and the poor dogs were liable also to be killed by "the scourgers." A noisy assembly must a congregation of these inhabitants of Aberdeen, driven to church under pain of fine and imprisonment, with their squalling children and barking dogs, have been; but, notwithstanding the confusion, there were some who, it appears, could actually sleep soundly

through all. So the presbytery, in 1608, decreed that their "actis" shall be put in execution against all sleepers during divine service. Still, however severe the proceedings both of kirk sessions and presbyteries were against these poor compulsory church attendants, we find repeated instances of disorders and of violent outbreaks, which we certainly never meet with in the English, or even the Southern-Scotch, churches at this period. Lord Glamis draws his sword in the kirkyard upon Patrick Johnston,—who is proceeding thither with his wife and two young children,—and kills him. The minister of Inverury complains that George Ferguson attacked "and injured him on the Lordes-day, whilst he was at divine service." Another churchgoer takes the minister's hat, and strikes him on the face with it: while one William Creighton and his wife fall to "cursing, swearing, and upbraiding the minister, he being in the pulpit, on the Lord's-day." So true is it that men can never be drilled by pains and penalties into religious duties.

The duties of a Scots kirk session in questions of public and private scandal, greatly resembled, as many of our readers know, those of the English quarter sessions. Charges of assault and drunkenness, of desertion of families, of riotous doings, of profligacy, of "banning and swearing," and of slander, all come under the cognizance of this church court:—and many afford characteristic illustrations of the times. The punishments, too, are equally characteristic. Public penance, bare-footed and in sackcloth,—carting through the streets and being "scourgit,"—setting in the pillory with "ane crown of paper on the heid"—"douking," in one instance, in the deepest pool and imprisonment in the "kirk wolt" are the favourite penalties. Those sentenced to imprisonment are, however, considerably allowed, if for a first offence, "breid and small drinke;" for a second, however, their food was to be "breid and vater altanertie"—the deprivation of even "the smallest ale" being evidently looked upon as the climax of such visitations. Notwithstanding this formidable array of punishments—to which may be added a long list of fines—the kirk session seems to have had sufficient employment. There are numerous charges by wives against their husbands for assaults:—one complaining that she was "dinged unmerciful;" while Elspet Dalgarno rather curiously complains of her husband "debaring hir from his societie," and also for "dinging her on the face with a gryt key maist crewellie and vmercifulle." We should think the poor woman might have been well content to be "debarred the societie" of such a husband. The kirk session very properly condemns such outrageous conduct, and commits him to "the steppill." On one occasion, a pair of bad husbands are brought before this august tribunal; and as prison room seems to be scarce, John Mitchell is "ordainit to be put in the kirk wolt," while John Davidson is consigned to "the steppill." The ladies, however, occasionally appear to have taken the upper hand; and the authority of the kirk session is, therefore, invoked on behalf of Patrick Watter, whose "spous misused him shamefullie," and in the kirk, too. Moreover in her house she took his sword from him, "bosting him thairwith:"—for which outrageous conduct she is ordered to be pilloried, carted, and "a crown of paper put on hir heid."

Cases of "slander" are very numerous; and most of these consist in false charges of witchcraft. In 1597, not fewer than twenty-four victims were burnt in Aberdeen on this charge:—popular opinion, therefore, as the editor remarks, must have undergone a great change in but

few years. Many of these "scandres" are curious. Elspet Young declared that a neighbour "had forspokin hir kow," who, in consequence, had not given any milk. She is convicted of false witness.—Violet Cadenhead calls her sister "ane manifest witche;" and declares that she had roasted Alexander Davidson's picture in her house for a month, whereof he died. She is sentenced to "sitt down on hir kneis in the kirk," "and say opinlie—Fals tounge sho leid." Helen Gib complains of a female neighbour, who

—"had maist schamefullie sclanderit the said Helene Gib vpon the hie streit, in calling hir common witche, be practicing the same in sic godlies manner as the witness culd testifie; the said Helene Cassie being personall present, and being accusit on the said bill, denyit that scho callit the said Helene Gib a witche, bot opinlie affirmit, in presence of the haill session, that scho spak thir words to the said Helene Gib, quhilk scho saw and wald byd be the same, to wit, That, on the Tuisday or Fryday befor Bartholl day, in the yeir of God, jai sex hundreth and thrie yeirs, the said Helene Gib past to the spout of the Nather Mylne of this burgh, and thair, with ane chopin stoup, keapit thrie sindrie droppis of water out of the spout, and, immediatlie thairafter, past to the fluid besyd the Trinitie kirkyard with ane chopin stoup, and fillit the same full of the fluid water, and tuke baith the mylne spout water and the fluid water, and keist the same immediatlie thairafter in the first caldroun among hir burne, and then maskit hir fatt and weische hir standis and bowyes, and tuke the waschinis thairfor and watterit the four nulkis of hir hous with it; and quhen scho kuist in the spaitter and the fluid water in the caldroun, scho said thir words, This is deid and quick tuis or thrys, and immediatlie thairafter scho tuke ane grene dog hillok and laid the ane halff thairfor aboue the dur, and tuke the vther halff and pat it vnder the gannies; and the said Helene Cassie being inquirt of the session gif scho had any witness to preve hir affirmatioun aganis the said Helene Gib, that saw hir do the premiss, answerit scho had no witness, for thair was nane present except onlie scho quha was then servand to the said Helene Gib."

This being denied by Helen Gib, the session convicted Helen Cassie of slander,—perhaps very unjustly, when we remember the many charms used by Scotch women in brewing, and which are perhaps even now not wholly disused.

In the session of December 1604, there are proceedings, at great length, against James Kempt, a baker, for slander against four women. These are curious, as showing how easily a plausible story of witchcraft might be made up. This James Kempt, when drinking with some companions, "said opinlie" that two years and a half ago, at Lammas, he saw the four women with three others before John Morison's door; and they there "danced in ane pool, having ane cleir gl'neing plaitt with thame full, as apperit to the said James," of somewhat bright and glittering; and, moreover, there was a black dog beside them, and it was "the very witching time of night,"—being between twelve and one. This was indeed a fearful story; more especially as James Kempt stoutly maintained its truth, and declared that he would prove all he had spoken. Strict inquiry was, therefore, made: when it was found that one Isobel Cheyne and three companions, did certainly "convene" before John Morison's door at the time specified,—but that they had been at "the Tug fisching" with some others, and stopped there to divide the herrings and other fish which they had brought; the little black dog being no familiar spirit, but a house-dog belonging to Archibald Beanes and which accompanied Isobel Cheyne home. The session having thus cleared up the case, adjudged James Kempt—

"to sitt in sack cloth on the pillar of repentance tua seuerall Sondays, the ane Sunday in the new kirk, and the vther in the auld kirk, during the haill

time of the sermones befor noone, and how soone the sermones ar endit, to cum down in sack cloth befor the pulpit, hair futed, and thair, in all humilitie, sitt down on his kneis in presence of the haill congregatioun, and thair confes (as the truth is) that he has most iniustie and maliciouslie sclandered the saidis persones, and ask first God, and nixt the congregatioun, with the haill parties sclandered, pardoun and forgiweness, and to say *Fals tounge he leid*, with certificatioun to the said James, gif he refusit to obey this decret, to proceed aganis him with the censures of the kirk, till he givie obedience, and with certificatioun to him, that gif he vter any sic sclanderous speiches heirefter, that he salbe baneist this burgh."

The desire after supernatural knowledge was, however, too strong to be easily put down. Thus, we find several persons accused of seeking after "charmers" in cases of sickness—or inquiring of "the Egyptians," after lost things; both which crimes were severely punished by the church. One man, it appears, laid claim to the services of a familiar spirit; and the case was brought before the presbytery. This was in 1601:—

"The quhilk day, Walter Ronaldsone, in the Kirkstone of Dyce, being citat to this daye, as he that was dilate to haue familiaritie of a spirite comperit, and being examinait, confessit that, upone a 27 yeiris syne, there came to his dur a spirit, and callit upone him Wattie, Wattie, and this was in the barley seed tyme, and thairfor removit, and thairafter came averie yeir twa tymes sen syne, bot saw na thing, bot hard a voce as said is. In speciall at Michaelmes in 1600 yeris it came quhair the deponar wes in his bed sleipand, and it satt down anent the bed upone a kist, and callit upone him, saying, Wattie, Wattie, and than he wakynnit and saw the forme of it, quhilk wes lyke ane littill bodie, haiffing a scheavin berd, clad in quhyt lening lyk a sark, and it sed to the said Walter, thou art oulder wraik; gang to the weachmanis hous in Stanivoid, and thair thou sall find baith siluer and gold with wescheb, quha, according to the directioun, geid to that place, haiffing witht him spaidis and companie, and could find na thing, and he wes poustaless he culd not do na thing, alwayes thait that wes with him, viz. Patrik Gray, John Baith, and William Paul, and they [serschit] the kist, bot fand na thing. The persuaderis of him to gang thair wer his wyf and bairnes, and believes thair is gold thair, gif it wes weil socht. Mr. William Nelsoun, his minister, reportit that he is a diligent hearer of the worde, and communicat with the Sacrament of the Lords Table; and Mr. William to try forder of him."

As we find no other entry respecting him, we suppose Wattie got off, with a mere admonition.

Hitherto, Aberdeen seems to have been under the rule of what Lady Margaret of Tillietudlem would call "ane moderate episcopacie;" but after the death of Maister Peter Blackburne, it seems to have separated far more widely still from Presbyterianism. The first notice of this we find in the order that the communion shall be administered both on Palm Sunday and Easter Sunday. The caution with which these changes were made is shown in the wording of the order,—"the Sondaye immediatlie preceding Pasche day." The bishop now, too, assumes the title of "Lord Bishop":—"blacke prelacie" was, therefore, as Master Rutherford would say, established in Aberdeen. From subsequent proceedings, we find that, although the mass of the people seem to have followed implicitly the order of their rulers, some withdrew "from resorting to the kirk, and hering of the sermones." Several stringent orders follow, compelling the people to attend their "awn kirkes;" and many under the fear of fine and imprisonment, "voluntarie, of their awin consent," as the entries carefully note, agree to become diligent church-goers. Neither morals nor manners appear to have mended under the rule of the Lord Bishop; and riotous behaviour

seems still to have been common in church. A woman is committed to the "kirk wolt" for scandalous behaviour, and swearing in the kirk:—while one James Davidson expressed his respect for a reverend doctor by saying "Dirtie Doctor Guildes teith." Such avowed contempt of clerical authority demanded a severe punishment; so the poor man was ordered to be put in the pillory "and thairefter to be queipeit at the staik in the correctioun hous."

A break of eleven years in these entries occurs soon after: and then we find George Morison accused—not of disrespect to episcopal ministers, but of "railing aganis the covenant and ministeris of Aberdeen." The service book and surplice were now at a discount, and the Directory and Geneva cloke paramount;—so the despiser of Presbytery is directed to appear in church, in sackcloth, and humbly crave forgiveness.

The fame of the noble strife for religious freedom which had been long carried on by our greatest men in England at length penetrated to the far north. It does not, however, appear to have been conveyed thither by books, but by that gallant army whose approach was as fatal to Presbyterian intolerance as it had already been to Episcopal. Oliver's soldiers, who could already argue as well as fight, put some new notions into the heads of the people; as the following will prove:—

"Alexander Gordoun, servant to Petfoddellie, being summondit tuis abefoir to comper befor the session of Abirdein, to give ane account of his professioun, and being demandit whairfor he did not comper sooner, he anserit if it had not bein to hold in the offris paines, he had not comperit now, nor at all; and being demandit if he did acknowledge us to be ane judicatorie, he anserit wlnes we was authorized be the comon wealth; and being demandit againe if he wes of our professioun, he anserit he cam not to give ane acquittance, and all the wholl tyme he carried himself vncivillie and wbraidinglie, *thanking God that the tymes wer not as formerlie*; in respect whereoff, the session ordained the said Alexander to be sumondit to the presbitrie the 24th November."

As the records of the presbytery do not reach so far, we cannot ascertain whether he escaped punishment. Most probably he did; for Master Andrew Cant, at this time chief minister of Aberdeen, was more than suspected of holding the true principles of religious liberty. The severe rule of the kirk session was, however, still maintained; although the people seem to have held church censures in far less respect than heretofore. Thus:—

"James Riauch havinge appearit in publict, and thair being observit by certain honest persones that he did mack ane moke of repentance, by putting in of sneishen (snuff) in his eyes to make them tear (weep), and by laughing vpon severall persones in publict. The saids persones havinge given notice thairfor, did appear befor the sessione this day, and gave evidence aganis him thairanent, and provit the same sufficientlie; as also it was observit his owne miscariing in the session. The matter was continewt to the next day, that the samen might be presentit to the presbitrie. [James was sentenced with the greater sentence of excommunication. On the 10th of December he petitioned to be released from the sentence; and he was made to undergo public penance every Sunday, until the 16th March, 1656, when he was absolved.]"

The following are good specimens of management:—

"Isobel Robertsoune, servand to Peter Hill, baxter, to be cited the next day, for her rayleing aganis Mr. Andrew Cant, minister, in saying that becaus the said Mr. Andrew spak aganis Yuill, he spak lyke ane old fool. \* \* \* 5th January 1657. Comperit Isobel Robertsoune, and being accusit for railing aganis the minister, denyed the same, but that she callid Yuleday ane old fool day, and thairvponne gave her oathe.—12th January, 1657.

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Compearit Johne Cowtes, and also compearit Patrick Murray, baxter, and declared that the said Johne Cowtes said to William Smart, his servitor, quhen he was biddenne work with his mill one Yule day, he wished that the baxter boyes brake ther legges that had him work one Yullday; and that he wold worke none till Twyseday thairefir, notwithstanding the mill was not broken, as wes alledgit be him, but able for grindeing. Compearit the said William Smart, and declared that vppone Yule ewin the said Johne Cowtes said to him he wished the baxters mens legges wer brokene that came to him till these thrie dayes ware donne. The said Johne referrit the vertie of these words to the said William Smart his outh; who, being solemnelie sworne, deponed positivellie thairvppone. And siclyke compeared Patrick Hill, and declared that John Cowtes refused to grinde any flower to him vppone Yule day, nor to Twyseday thairefir. The sessionne, in respect of the said John Cowtes his cursing and wicked expressions, appoints him to appear befor the pulpit, and to be rebuked therfor."

Things thus continued upon the Presbyterian plan until the Restoration; and then we find "Daud, be the mercie of God Lord Bishop of Aberdene," enacting the use of the Episcopal form of worship—the suppression of "all private conventicles"—and lastly, as the climax, "that the habite of ministeris be suche as beesemeth calmes, decencie, gravitie, and sutableness to ther calling;" and therefore, they are enjoined to have "a cassik coat!" The cassock did not, however, confer much calmness; for the wearers seem to have been in continual hot water,—what with Papists, sectaries and Quakers. There were also rumours of witchcraft;—but even that once dreaded visitation excited little alarm in comparison with Querismis. The Bishop, however, was not idle; for he appointed three several forms of excommunication against the three classes of offenders—religious opinions in the palmy days of "Charles the Second of pious memory" being considered of far more importance than moral conduct. We have the three excommunications at full length. They are quite in the usual form of such documents; and doubtless produced their usual effect—that is, increased the evil they were meant to remove. Fines, imprisonment and dragoonings apparently answered better. But had the records of the synod extended only a few years further, we should have seen another change, and excommunication pronounced by the excommunicated on the Lord Bishop himself.—We close this characteristic volume with feelings of renewed thankfulness to those great men who fought and wrote—not for any one form of church government, however pure, in preference to another, but—for the right of every human being to follow out to the utmost his own religious convictions.

OUR LIBRARY TABLE.

*The Modern Unbeliever*, by Emma Newton. Author of "Difficulties of a Young Clergyman in times of Division." Emma Newton (she must not recoil from her Christian name, seeing that we know not whether "the style" of Maid or Matron belongs to it) seems to have no scruples in flying at the highest possible game. The title of her former book makes this clear. We should have thought "The Difficulties of a Young Clergyman's Wife" quite enough for female management; without any meddling with the "false doctrine, heresy, and schism" which must pass through the hands of the Professional Theologian during "times of division." Here, again, she grapples with one of the hardest subjects in the range of philosophy, with a confidence as entire as that of "Penthesilea in ancient times, and also Joan of Arc" (as Dugald Dalgetty hath it). Her armoury of weapons against Unbelief is nothing more or less than the capital initial. This she fixes on the hero, "calling him U" with as much emphasis as angry gentlemen are used to throw into the personal pronoun in other less pious

warfares—and by the above designation supremely satisfied that she has deprived him of power to reply. To be serious, Emma Newton has but a poor idea of the virtue and value of Faith: since, to show the evil of its opposite she is obliged to resort to improbable occurrences. The Unbeliever is represented as just married to a wife whom he passionately loves and who passionately loves him. On a sudden, he becomes frantically jealous of one of his lady's discarded lovers; without due provocation quarrels with him, shoots him dead in a duel, and wanders the world, thenceforth, with a Cain's mark on his forehead. We are Unbelievers enough to doubt the good effected by productions at once so unchristian in tone and so irrational in invention as this. The Lady, however, writes pleasantly; and in some novel "innocent of mischief" would probably be found an amusing companion by pilgrims of every sect and party.

*The True End of Education, and the Means adapted to it*. By Margaret Thorneley.—The lady who has written this work must excuse us for refusing to discuss her dogmatic mode of settling controversies which have divided pious and learned men for two centuries. Perhaps she will allow us to hint, that a treatise on education is not the most appropriate form in which her opinions on speculative theology might have been given to the world.

*The Excellency of Man; deduced from Reason and Revelation*. By Edward West.—Unable to comprehend the first two or three pages, and unable to get further,—we have only to say that this book is either above or below criticism.

*On the Physical Cause of the Death of Christ*. By W. Stroud, M.D.—It is quite sufficient to give the title of this work. For obvious reasons, the subject is one utterly unsuited for discussion in the columns of a miscellaneous journal.

*A Manual of Christian Evidence*. By the Rev. J. Cumming.—The reverend author has ventured unwisely to add one to the many existing proofs that a good cause is more likely to be injured by a feeble defence than by violent attack.

*Truth as Revealed*. By the Rev. G. Smith.—We should hardly have expected from the title to find this work a bitter attack on the Voluntary principle as maintained by the Free Church of Scotland. With the controversial matter we can have nothing to do; and the author's manner is not calculated to win attention.

*The World to Come*. By the Rev. J. Cochrane.—This volume consists of sermons preached at Cupar, in Scotland, on the subject of the Resurrection and a Future Life. They would have been all the better had the preacher guessed less and reflected more.

*The Catholic Christian's Guide to the Right Use of Christian Psalmody and of the Psalter*. By the Rev. H. Formby.—We can only commend this guide to such as desire to be led astray.

*What is Religion?—The Question Answered*. By Henry Colman.—We rarely notice sermons—particularly when they deal in controversy; but we may say of this work that it is written in a pleasing style, and that the arguments are stated in a tone of gentleness and moderation calculated to conciliate opponents.

*Sectarianism the Bane of Religion and the Church*.—A more thorough specimen of sectarian bigotry than this pamphlet it has rarely been our misfortune to meet.

*On Dreams, in their Mental and Moral Aspects, as affording Auxiliary Arguments for the Existence of a Spirit, for a Separate State, and for a Particular Providence*. In two Essays. By John Shepherd.—We are at issue with the amiable compiler of this volume, in a matter of such vital consequence to his theories that we need but state the point—and then leave the essays to those with whom it offers no difficulty. Mr. Shepherd of course bases his speculations upon examples; but he seems to accept every one presenting itself with the child-like assurance that tradition and literal truth are one. Ere we can theorize we must have data on which not only we can ourselves, but on which we can make others, rely.—Such ground-work does not exist in Mr. Shepherd's illustrations and collections;—and thus it is hardly needful to follow his deductions "for better, for worse."

*How to Speak and Write French Correctly*. By D. M. Aird.—A useful little book for pupils who are just commencing the French syntax. The plan is a good one; but had the number of pages—which do not reach seventy—been trebled, it would have been much better carried out. The rage for tiny volumes—a natural reaction on the folios and quartos of our early years—is not yet, in its turn, extinct. We hope to see it so ere long.

*A Guide to the Investment of Capital*. By G. M. Bell.—Judicious observations succinctly stated.

*An Astronomical Lecture, &c.* By the Rev. R. Wilson.—Mr. Wilson teaches his Greenock friends that the permanence of the moon's face is a proof of her not turning on her axis:—a notion which we had occasion to mention not very long ago.

*Tables for Cuttings and Embankments*. By Sir J. Macneill.—A second edition, on coloured paper. An extensive set of tables,—and certainly very easily used; but probably more useful still in point of correctness.

*Algebra made Easy*. By T. Tate.—This work is easy enough for the subject, and well selected. Its principal fault is, that though negative quantities are used they are not interpreted. For example:—a little question is given to find how many oranges cost 40 pence, on condition that all but 4, sold for 48 pence, will give a penny of gain upon each. One answer is 20;—right enough. But according to the rules laid down and used in the very question preceding this, another answer ought to be —8. Now, the student will ask, what does this mean? We should say—exclude the use of negative quantities until they can be interpreted.

*The Life and Times of the Roman Patrician Alexis*. By M. G. Keon.—This book is commended by its author "to the protection of that great and wonderful saint of whose life it treats; and who may easily, if he please, obtain for it a success not often achieved by unworlly productions in a worldly age." A book enjoying such powerful patronage can have no need of our good word.

*The Learned Societies and Printing Clubs of the United Kingdom*. By the Rev. A. Hume, LL.D.—This is one of a numerous class of works hastily compiled and written—and as a natural consequence full of errors. In the present instance this is the more unpardonable as the author sets forth on his title-page that he has compiled his book from "official documents." As a specimen of his work, and in justification of our remarks, we will adduce a few of his mistakes on the subject of our leading scientific institution—"The Royal Society." We are told that "no matter how high the qualifications of the applicants for admission, no matter how urgent their importunity, no matter what sums they are prepared to pay, only fifteen can be elected annually." This is incorrect. The Council recommend fifteen for election;—but the Fellows, in virtue of the power vested in them by the Charter, may elect as many members as they think proper.—Dr. Hume says that the society removed from Gresham College to Crane Court in 1701:—1710 was the year of their removal.—The Transactions it is stated consist of two parts, published half-yearly, forming a volume the price of which varies from nine shillings and sixpence to one pound twelve.—It not unfrequently happens that four parts are published in a year—and the prices range from one pound to five pounds per volume. In another part of the work we are told that "from the period of the Restoration to the reign of Queen Anne the Royal Society stood alone."—Has Dr. Hume never heard of the Dublin and Oxford Philosophical Societies, which were in existence during a considerable portion of this period, and whose Fellows were in the habit of transmitting their discoveries to the Royal Society?—A correct hand-book of the learned societies of the United Kingdom would be a useful volume to a certain and limited class of individuals; but the writer of the volume before us is evidently not the man to undertake such a work.

LIST OF NEW BOOKS.

Arnold's (T. K.) Selections from Cicero, Pt. I. Orationes, 12mo. 4s. cl.  
Bogert's Chronological Scripture Atlas, small 4to. 18s. 6d. hf-bd.  
Bennett's (W.) Six Weeks in Ireland 12mo. 2s. cl.  
Brighton Kitting Book, small 16mo. 6s. awd.  
Chambers's (R.) Spelling Book of Utility, 2nd ed. 12mo. 1s. 6d. bd.  
Chitty's Commercial and General Law, 6th ed. 8vo. 24s. cl.  
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 Eusebius's *Ecclesiastical History*, 4th ed. 8vo. 7s. cl.  
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 Greig's (W.) *Flower Grover's Instructor*, 12mo. 1s. 6d. cl. swd.  
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 Henderson's (Mrs.) *Scripture Lessons*, 2 vols. 18mo. 5s. cl.  
 Hume's (Rev. A.) *Learned Societies and Frisking Clubs*, pt. 8vo. 3s. 6d.  
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 Lawson's (Rev. J. P.) *Bible Cyclopædia*, Vol. I. Biography, 10s. cl.  
 Manning's (Archdeacon) *Sermons*, Vol. III. 8vo. 10s. 6d. cl.  
 Mill's (Rev. Dr.) *Analysis of Bishop Pearson on the Creed*, 2nd ed. 5s.  
 Morell's (J. D.) *Speculative Philosophy of the Nineteenth Century*, 24s.  
 Newton's (Emma) *The Modern Unbeliever*, 8vo. 4s. cl.  
 Nights of the Round Table, 18mo. 2s. cl.  
 Phipson's (T.) *Wonders of the Electro-Magnetic Telegraph*, 12mo. 1s.  
 Pulpit (The, Vol. II. 8vo. 7s. 6d. cl.  
 Punch! or, the London Charivari, Vol. XII. 4to. 8s. 6d. cl.  
 Riddell's (H. S.) *Poems, Songs, and Miscellaneous Pieces*, 12mo. 5s. cl.  
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 Wilson's (Rev. E.) *Naturalist's Poetical Companion*, illustrated, 7s. 6d.

### THE SPIRIT OF THE SUMMER.

BY THE AUTHOR OF 'THE PATRICIAN'S DAUGHTER.'

- "Startle not my lonely gloom,  
 Shine not in my darkened room,  
 Spirit of the Summer!  
 Winter hoar and Autumn ere  
 Shall from me have warmer cheer  
 Than thou, radiant comer!"
- "Cold—with icicles for hair—  
 And Decay—who scarce can bear  
 Weight that only presses—  
 Less do ye offend my sight  
 Than this vision of delight  
 With her false caresses!"
- "Give me good that will endure,  
 Or the grief that mocks at cure;  
 But no passing splendour—  
 Cruel mother of a bliss  
 Which when rising to her kiss  
 She doth so surrender!"
- "Hence then, Summer! though thy breath  
 Woo with fragrance, and thy wreath  
 Ransack Nature's treasure,  
 Though the enamoured zephyrs creep  
 Round thy robe until they sleep  
 Swoning with the pleasure!"
- "Scarce dost thou attain thy prime  
 Ere thine envious servant, Time,  
 Narrows daylight's glory:—  
 Flowery meshes that entwine  
 Thy feet, are but too apt a sign  
 Of thy beauty's story."
- Then, with voice that did exhale  
 Tenderness, She chid my wail:—  
 "Nought that's bright should perish!  
 Though my form desert thine eyes,—  
 Know the beauty never dies  
 That the heart can cherish."
- "Love me!—Though I quit thy side,  
 In thee shall my power abide;  
 And, my grace recalling,  
 Thou shalt loveliness perceive  
 In the October rose, and grieve  
 Gently for its falling."
- "Friends that gather round thy hearth  
 When the snows envelope earth  
 Shall have greeting fonder  
 If in summer twilights ye  
 Mutely strayed, and tenderly  
 In their hush did ponder."
- "Angel faces Youth beholds  
 When the veil of Time unfolds,  
 Thoughso soon it closes,  
 Once beheld are known till death;  
 And on Memory's bosom Faith  
 Placidly reposes."
- "Outward beauty thus awakes  
 Human love,—and but forsakes  
 That the inward yearning  
 By its passion may create  
 Glories rarer than await  
 Mortal sight's discerning."
- "Bud of Light! accept each ray  
 Would warm thee, though it flit away;  
 That, thy bloom securing,  
 Whether come the sun or shower  
 Radiance thou around may'st pour  
 As thyself enduring!"

### SIR JOHN FRANKLIN'S EXPEDITION.

Sackville-street, July 5.

In order to fix Sir John Ross to facts, I will take the gallant officer's word that he sailed in his ship *twenty-four* instead of *four* miles in four years—the eighty miles he made in boats is an item in my favour; and ask him if he is justified for one instant from the premises which he has himself taken in denying my assertion that the eastern land of North Somerset is an ice-blocked land?

Further, if he can reconcile his present views with those which he has printed in page 603 of the 'Narrative' of his Expedition—when the horrors of his prison-house, as he called his limit of four—now extended to twenty-four—miles were fresh before him,—in the following words:—"To see, to have seen, ice and snow, to have felt ice and snow for ever, and nothing for ever but snow and ice, during all the months of a year, to have seen and felt nothing but uninterrupted and unceasing ice and snow during all the months of four years, this it is that has made the sight of those most chilling and wearisome objects an evil which is still one in recollection as if the remembrance would never cease?"

Nevertheless, Sir John Ross contends not only that he is right in considering the eastern land of North Somerset to be ice-free, but that his premises afford a contradiction to my remark—that "The assumption by him that the navigation of the Polar Seas depends materially, if not entirely, on the preceding winter—whether it had been mild or the reverse—and not entirely on the aspect, is gratuitous."

Even if Sir John Ross were able to prove my position unsound, it would not assist, in the smallest degree, to establish the soundness of his own. In order to determine that the navigation of the Polar Sea depends materially, if not entirely, on the preceding winter, a series of observations extending over a series of years would be required. Such a series of observations has not been made;—and how, in truth, could they, when the larger portion of the Polar Seas has to be discovered?

The discovery of the one hundred miles of westing on the western shore of Baffin Bay claimed by Sir John Ross, was long subsequent to that of Barrow Strait—which lies far to the westward of it; and therefore, valueless in the solution of the North-West Passage problem.

It is vain for Sir John Ross to contend these points, with the facts that are altogether against him. How can he have "advanced a single step towards the solution of the great question" when the westing which he made in his last expedition was hundreds of miles eastward of Sir Edward Parry's westing? And how can he expect successfully to contend for the eastern land of North Somerset being ice-free when there is printed in indelible words, not only his own experience that he crept twenty-four miles in four years, and at last abandoned his ship—but the three years' experience of Sir Edward Parry, that "the ice appeared always to cling to the western shore" (eastern land of North Somerset), "in a very remarkable manner, while the opposite coast was comparatively free from it?"

The first time that I called attention to the law which I lay claim to have discovered—of eastern lands being ice-clogged—was in the form of a letter addressed to Sir John Barrow, dated 21st December, 1844, and published in the *Athenæum* of January 11th, 1845; and Sir John Barrow's "Voyage of Discovery and Research within the Arctic Region" was not published until 1846:—so that I could not well have borrowed the idea from Sir John Barrow.

I am, &c., RICHARD KING.

### OUR WEEKLY GOSSIP.

WE have no positive information as to the proceedings of the British Museum Committee:—for we cannot call by that name an impression which has some prevalence among those in the way of hearing rumours,—that it is a doubtful matter whether their proceedings will be made public from time to time. Some pretend that it is under consideration whether any one shall be admitted except a short-hand writer named by the Commission. To this we can give no credit. We deem it hardly possible that the Commission can intend to commence its proceedings by a step which

will at once nullify its influence. A party of gentlemen may, with the consent of those to whom any room belongs, sit in that room as long as they please, hear the evidence which any witnesses choose to tender, and make a report. They may also be empanelled under a Royal Commission. But unless they make a public inquiry, under the eye of that public opinion to which they owe their official character, their meeting will be mere conference, their witnesses no more than second-rate farce performers, and their report no better than waste paper. This is the plain truth. Public opinion has demanded public inquiry,—and will not take anything else in its place. If the Government wish to tell us that it will support the existing state of things, right or wrong, well and good:—we must submit until the voice of opinion becomes still stronger. But why not say so at once?—or if a tub must be thrown to the whale, let it be a tub, and not a pipkin. A secret Commission will be worth an after-dinner conversation—and no more.

The Fourth Anniversary Meeting of the Ray Society was held during the session of the British Association at Oxford,—Hugh E. Strickland, Esq., in the chair. The report of the secretary stated that two volumes—"Reports on the Progress of Zoology," and a translation of Oken's "Philosophy of Nature," by Mr. Alfred Tulk,—were ready for distribution to subscribers of 1847. The society now numbered nearly a thousand members; and only a few copies of the former works were remaining on hand. Resolutions were moved by Prof. Henslow, Capt. Ibbetson, Dr. Carpenter, Dr. Hodgkin, the Prince of Canino, and other gentlemen. The Prince of Canino spoke very warmly in praise of the society; and pointed to the great work of Alder and Hancock, "On the British Nudibranchiate Mollusca," as alone worthy of the efforts of the society. A new work of the same size and in the same style as the Nudibranchiate Mollusca, "On the British Jelly Fishes," by Prof. E. Forbes, was announced as preparing for publication.

We may add to the list of those whom Her Majesty, on the recommendation of Lord John Russell, has pensioned for intellectual services, the name of Mr. Newport. This gentleman, a Fellow of the Royal Society, was one of the founders and lately President of the Entomological Society. The amount of his pension is 100*l.*—and the minister in announcing it regrets that the numerous claims on the fund which supplies it have not permitted him to make the grant more commensurate with Mr. Newport's scientific merits.

An Irish paper (the *Dublin Journal*) offers the following particulars relating to Her Majesty's grant of 300*l.* a-year to the Apostle of Temperance,—which we give only on its authority.—"A committee has been lately formed in London of the Dukes of Norfolk and Leinster, Earl of Arundel and Surrey, Marquis of Sligo, Marquis of Lansdowne, Earl of Stanhope, Earl of Wicklow, Earl Fitzwilliam, Lord J. Russell, Lord Morpeth, Lord Montagu, &c., for the purpose of creating a fund sufficient to purchase an annuity of 800*l.* a-year for this public benefactor, to enable him to continue his unceasing exertions for the welfare of millions. The Queen, anxious to aid in so desirable an object, has given 300*l.* per annum towards this praiseworthy object. With such an example of munificence before those who are able to promote so desirable an object, we trust that the labours of the gentlemen who form the committee will be speedily brought to a close."

Comets are the ordinary events of the day—at least as common as balloons. Mr. Hind has announced to the *Times* a fresh arrival of the kind in the following terms:—"I have received this morning a letter from M. Mauvais, of the Royal Observatory at Paris, stating that he discovered a comet near the Pole on the night of the 4th of July. The approximate position was—

July 4, at 13h. 36m. 5s. M. T. R.A. 52h. 3m. 13s.  
 North Decl. 80° 26'

In 34 minutes, the R.A. diminished 18 seconds, and the declination increased 1 min. 28 sec."

The Committee of the Health of Towns Association have sent round a circular conveying the thanks of the Association to the members of the public press; whose strenuous support has, they feel, come powerfully in aid of their own honourable labours.—Pressed



on the subject of town-burial during the late discussion in the House of Commons, Lord Morpeth, we may mention, gave his assurance that he would hereafter use his best efforts to carry a bill for the prevention of that fruitful source of disease.

A correspondent of the *Daily News* announces that an Haytian Pantheon is about to be founded. The Hayti ministers, it seems, in their recommendation of a monument to the late President Riché in the House of Representatives, coupled with his name that of Péion. Hereupon, a friend of the memory of Desalines got up and proposed that he should be united in honour with the other two: and lastly, a friend of the late "modest Philippe Guerrier" moved that he should be added to the group. After some random talking, it was agreed that a church shall be built at Port-au-Prince, to which the mortal remains of these four Presidents and of Péion's daughter are to be transferred.—An African Prytaneum or Walhalla will be the next move in the history of negro civilization.

In Paris, the Academy of Sciences has elected our English chemist Prof. Graham to the vacancy in its list of corresponding members.—The same papers report the deaths in that city of M. Pariset, a free member of the Academy of Sciences and Perpetual Secretary of the Academy of Medicine—and that of the eminent physician Dr. Broussais.

The Imperial Academy of Sciences in Vienna has elected the members of its bureau. The Baron Hammer de Purgstall has been appointed President, Herr Baumgaertner Vice-President, M. d'Eting-Hausen First Secretary, and Dr. Meinertz, one of the Secretaries to the Imperial Library, Second Secretary. The election of the President was carried by acclamation. As we have already announced, the Curator of the young Institution is the Archduke John.

All the papers in England that have preceded us in the last six days, will already have told their readers how the classic shades of the ancient University of Cambridge have been startled from their propriety by an irruption of courtiers. The whole thing was an affair of flounces and feathers. The drama, though consistent in itself, was out of character with the stage on which it was played.—All the world knows that these multiplied distinctions (we suppose!) which Her Majesty and her illustrious Consort have heaped on the cultivators of learning and science have been appropriately acknowledged by one of the bodies most conspicuously representing both, in the election of the latter to be its Chancellor. The Prince seemed to feel his academic honour as a thing of course—and wore his academic robes with a royal air. Throughout the whole affair he was less a Chancellor than a Prince "playing at" Chancellor. The Poet-Laureate was awakened from his long sleep for the occasion; and invoked the Muses to the royal-academic chancery—with what effect we must let our readers judge for themselves.—

ODE.

INTRODUCTION AND CHORUS.

For thirst of power that Heaven disowns,  
For temples, towers, and thrones,  
Too long insulted by the Spoiler's shock,  
Indignant Europe cast  
Her stormy foe at last  
To reap the whirlwind on a Libyan rock.

SOLO—Tenor.

War is passion's basest game  
Madly played to win a name;  
Up starts some tyrant, Earth and Heaven to dare;  
The servile million bow;  
But will the lightning glance aside to spare  
The despot's laureled brow?

CHORUS.

War is mercy, glory, fame  
Vaged in Freedom's holy cause;  
Freedom, such as man may claim  
Under God's restraining laws,  
Such is Albion's fame and glory;  
Let rescued Europe tell the story.

RECIT.—(Accompanied)—*Contralto.*

But, lo! what sudden cloud has darkened all  
The land as with a funeral pall  
The Rose of England suffers blight,  
The flower has drooped, the Isle's delight,  
Flower and bud together fall—  
A nation's hopes lie crushed in Claremont's desolate hall.

AIR—Soprano.

Time a checkered mantle wears;  
Earth awakes from wintry sleep;  
Again the tree a blossom bears—  
Cease, Britannia, cease to weep!  
Hark to the peals on this bright May-morn!  
They tell that your future Queen is born!

SOPRANO SOLO AND CHORUS.  
A Guardian Angel fluttered  
Above the babe, unseen;  
One word he softly uttered—  
It named the future Queen:  
And a joyful cry through the island rang,  
As clear and bold as the trumpet's clang,  
As bland as the reed of peace—  
"Victoria be her name!"  
For righteous triumphs are the base  
Whereon Britannia rests her peaceful fame.

QUARTET.

Time, in his mantle's sunniest fold,  
Uplifted on his arms the child;  
And, while the fearless infant smiled,  
Her happy destiny foretold:  
"Infancy, by wisdom mild,  
Trained to health and artless beauty;  
"Youth, by pleasure unbeguiled  
"From the lore of lofty duty;  
"Womanhood in pure renown,  
"Seated on her lineal throne:  
"Leaves of myrtle in her crown,  
"Fresh with lustre all their own.  
"Love, the treasure worth possessing  
"More than all the world beside,  
"This shall be her choicest blessing,  
"Oft to Royal hearts denied."

RECIT.—(Accompanied)—*Bass.*

That eve the Star of Brunswick shone  
With steadfast ray benign  
On Gothic's dual roof, and on  
The softly flowing Leine;  
Nor failed to gild the spires of Bonn,  
And glittered on the Rhine,—  
Old Camus too on that prophetic night  
Was conscious of the ray;  
And his willows whispered in its light,  
Not to the zephyr's sway,  
But with a Delphic line, in sight  
Of this auspicious day:

CHORUS.

This day, when Granta hails her chosen Lord,  
And proud of her award,  
Confiding in that Star serene  
Welcomes the Consort of a happy Queen.

AIR—*Contralto.*

Prince, in these collegiate bowers,  
Where science, leagued with holier truth,  
Guards the sacred heart of youth,  
Solemn monitors are ours.  
These reverend aisles, these hallowed towers,  
Raised by many a hand august,  
Are haunted by majestic powers,  
The memories of the wise and just  
Who, faithful to a pious trust,  
Here in the founder's spirit sought  
To mould and stamp the ore of thought  
In that bold form and impress high  
That best betoken patriot loyalty.  
Not in vain those sages taught—  
True disciples, good as great,  
Have pondered here their country's weal,  
Weighed the future by the past,  
Learned how social forms may last,  
And how a land may rule its fate  
By constancy inviolate,  
Though worlds to their foundations reel  
The sport of fœdious hate or godless zeal.

AIR—*Bass.*

Albert, in thy race we cherish  
A nation's strength that will not perish  
While England's sceptred line  
True to the King of Kings is found;  
Like that wise ancestor of thine  
Who threw the Saxon shield o'er Luther's life,  
When first, above the yells of bigot strife,  
The trumpet of the Living Word  
Assumed a voice of deep portentous sound  
From gladdened Elbe to startled Tiber heard.

CHORUS.

What shield more sublime  
E'er was blazoned or sung?  
And the Prince whom we greet  
From his hero is sprung.  
Resound, resound the strain  
That hails him for our own  
Again, again, and yet again:  
For the Church, the State, the Throne!—  
And that presence fair and bright,  
Ever blest wherever seen,  
Who deigns to grace our festive rite,  
The pride of the islands, Victoria the Queen!

A bill to amend the laws relating to the protection in the colonies of works entitled to copyright in the United Kingdom, prepared and brought in by Mr. T. Milner Gibson and Mr. Parker, proposes to enact "that in case the legislature or proper legislative authorities in any British possession shall be disposed to make due provision for securing or protecting the rights of British authors in such possession, and shall pass an act to make an ordinance for that purpose, and shall transmit the same in the proper manner to the Secretary of State in order that it may be submitted to Her Majesty,—and in case Her Majesty shall be of opinion that such act or ordinance is sufficient for the purpose of securing to British authors reasonable protection within such possession,—it shall

be lawful for Her Majesty, if she think fit so to do, to express her Royal approval of such act or ordinance; and thereupon to issue an order in council declaring that so long as the provisions of such act or ordinance continue in force within such colony, the prohibitions contained in the recited acts, and any prohibitions contained in the said acts, and any other acts, against the importing, selling, letting out to hire, exposing for sale or hire, or possessing foreign reprints of books first composed, written, printed, or published in the United Kingdom, and entitled to copyright therein, shall be suspended so far as regards such colony; and thereupon such act or ordinance shall come into operation, except so far as may be otherwise provided therein, or as may be otherwise directed by such order in council."

Last Week but One.

ROYAL ACADEMY OF ARTS, TRAFALGAR-SQUARE.  
The EXHIBITION of the ROYAL ACADEMY is NOW OPEN.  
—Admission (from Eight o'clock till Seven), 1s.; Catalogue, 1s.  
JOHN PRESCOTT KNIGHT, Esq., Sec. Gen.

BRITISH INSTITUTION, FALL MALL.

The Gallery, with a Collection of Pictures by Ancient Masters, one room being appropriated to a Selection from the valuable Gallery of the Marquis of Bute, together with some Specimens of the works of Deceased British Artists, is OPEN daily, from Ten till Six.—Admission, 1s.; Catalogue, 1s.  
WILLIAM BARNARD, Keeper.

THE NEW SOCIETY OF PAINTERS IN WATER COLOURS.—THE THIRTIETH ANNUAL EXHIBITION is NOW OPEN at their GALLERY, FIFTY-THREE, FALL MALL.—Admission, 1s.; Catalogue, 6d.  
J. FAHEY, Secretary.

ST. MARK'S, VENICE.

DIORAMA, REGENT'S PARK.—Just Opened, with a new and highly interesting Exhibition, representing the INTERIOR OF ST. MARK'S, at VENICE, justly considered one of the most magnificent temples in the Christian world; and a VIEW OF TIVOLI, near Rome, with the Cascades, &c. The picture of St. Mark's is painted by M. Drouot (pupil of M. Daguerre), from drawings made on the spot expressly for the Diorama by the late M. Renoux. The View of Tivoli is painted by M. Bouton. Both pictures exhibit various novel and striking effects of light and shade. Open from Ten till Six.—Admission, Saloon, 1s.; Stalls, 2s.

ROYAL POLYTECHNIC INSTITUTION.—The ELECTRIC TELEGRAPH COMPANY has deposited, for a limited period, a complete series of Apparatus, illustrating the Principles of the ELECTRIC TELEGRAPH as now worked on the leading Lines of Railway. Also, superb Specimens of their ELECTRIC CLOCKS, ALARUM, &c. Various works of interest explained. Dr. Bachmayer's Lectures on Natural Philosophy. Chemical Lectures by R. M. Nod, Esq., on the Evenings of Monday and Wednesday. The beautiful Optical Effects include the last Dissolving Views, Diving Bell and Diver, with Experiments, &c. &c.—Admission, 1s.; Schools, Half-price.

THE BOJESMANS from SOUTH AFRICA, at the EGYPTIAN HALL, PICCADILLY. Admission, 1s.—"In appearance, they are little above the monkey tribe."—*Times*. "A pigmy race of wild men."—*Post*. "The audience at Exeter Hall were wonderstricken at beholding them."—*Chronicle*. See Moffatt's (the Missionary) work on South Africa, Lichtenstein, &c. Hours of Exhibition from Eleven in the Morning until Nine in the Evening. Bojesman's Wild Dance and Mode of Warfare at Four and Eight o'clock.

This Exhibition is daily visited by the most distinguished of the nobility and men of science.

SIGNOR SARTI'S FLORENTINE ANATOMICAL MUSEUM, 209, REGENT-STREET, acknowledged by the press, faculty, and élite, to be one of the most scientific and instructive establishments at present in town, wherein the public may by a visit learn more of the complex functions regulating his own individual body than months of diligent reading would impart. Ladies' days, Tuesdays and Thursdays. Lecture every hour. One Shilling. Open from Ten till Dusk.

FINE ARTS

EXHIBITION IN WESTMINSTER HALL.

WE pass over *Richard Cœur de Lion pardoning the Soldier who shot him* (No. 1), by Mr. W. Brett, and *St. George Victorious* (No. 2), by Mr. Thomas Harrington Wilson,—with this remark, that they would be scarcely eligible for elevation on sign-posts, and ought not to have found admission here.

*The Descent from the Cross* (3), by Mr. N. C. Hughes, is but a sorry paraphrase from Rubens, with no redeeming point to justify the plagiarism.—*James the Sixth, last King of Scotland, proclaimed at Edinburgh King of Great Britain* (4), by Mr. Henry M'Manus, is also but a sorry affair; the action and upper half of the female figure on the right being the only phases removed from the commonplace.—Mr. John Ballantyne in his illustration of *Gregory the Great and the Anglo-Saxon Captives* (5) has entirely missed the point of the oft-told anecdote. The beauty and innocence of the captives which called from the sovereign pontiff the observation, "*Si non essent Angli forent Angeli*" finds no representative in Mr. Ballantyne's version. Not only has the painter to acquire the power of expressing his ideas in art, but his mind and perception must undergo considerable improvement to qualify him for the task of a pictorial illustrator. Mr. Edward Corbould is an artist of enterprise. It matters not what may be the department—what the nature of the material or vehicle to be employed—what the dimensions—what the subject of competition—in all he is sure to be found engaged. His judgment and good taste are not, how-

ever, equal to his enterprise. That he has considerable boldness of hand and facility of noting down and imitation may be seen in all he does:—the power of imagining, digesting, and elaborating a high-class historic subject can scarcely be expected from the variety and diffuseness of the occupations that engage his attention. In the present picture perspicuity is wanting. The principal figure is unrecognizable amid the mass of costume and accessory matter; and there is an entire absence of the simple or severe qualities without which the greatest exuberance of fancy or the deepest erudition will fail to impress in Art exercised on such extended dimensions.—*William Eynesham reciting the valour of the Rose of Rouen and the Victory of Towton Field* (6), will not win distinction for Mr. Corbould as an historical painter.

In the modern Italian school there is yet that lingering after-allegory which helped to mark the decadence of the art in that country; and Signor S. Gambardella, in his picture of *The Reign of Queen Victoria* (7), has exhibited all the peculiarities of such treatment. There are much careful painting and elaborate finish in a series of female figures intended to personify Peace, Britannia, Agriculture, Commerce, Love, &c.—each of which is defined by trite emblems and academic pose rather than by any identification of feeling. *The ensemble* forms no group, inspires no sentiment, and composes no tableau. The forms, carefully as they are finished, are not in accordance with anatomical truth; and the general effect of colour is such as would fit the picture for the purposes of the establishments at Sévres or Dresden.

From Mr. Townsend we always expect ability and character. The subject of his choice *Charles in the Oak*; the *Fidelity of Colonel Careless* (9) can hardly be said to have afforded an opportunity for the display of such powers as distinguished the cartoon of 'The Fight for the Beacon' by the same artist. There, the anatomical education of the artist was applied in a masterly manner to the delineation of human form and scene in a style of high order. A composition like the present scarcely realizes such anticipations as that work raised. The subject, lower in class, is good in the composition of two figures that well illustrate the text. The head of Charles, resting on the lap of the gallant Colonel, is scarcely in accordance with the known portraiture; and the other extremities—hands especially—want the refinement usual in persons of condition. There are variety of colour and freshness in the management of the foliage which forms a background to the group,—expressed by a vigorous touch and suited to the large scale.

*England's first Prince of Wales* (12), by J. P. Davis, is a picture of great pretensions, by an artist whose residence abroad should have made him conversant with the theory of historic art. As a piece of mere technical arrangement in the portioning out of masses and direction of forms there is ability. In the power of realizing character, delineating form, or achieving completeness it is wholly wanting. There is as much lack of variety in the characters of the group of females, who might pass for the members of a common family, as there is in the general colour of the whole—in which a hot red forms too conspicuous an element. The want of drawing is remarkably exemplified in the prominent group to the right consisting of the aged minstrel and an attendant youth. The latter is of singular inconsistency.

Mr. Butler Morris's composition, *Youth stimulated to Virtue by the contemplation of the mighty deeds of Britain's noble Sons* (14), offers a more reasonable occasion for associating together distinguished personages of past times than the similar idea expressed by Barry in his large picture in the Adolphi. The persons here are all of one country; and grouped with more reference to chronologic propriety than in Barry's work adverted to,—which seems, nevertheless, to have inspired the painter. Mr. Morris is a person of like enterprise with Mr. Corbould,—but without the latter's diffuseness; and we cannot help thinking that if he would concentrate his force upon a single work, not of very large dimensions, making it the *gage de bataille* of his powers, studying every portion with attention, and with such feeling as is indicated by the two figures of History and Poetry in his present composition—but with greater precision—he would make

his talent more available than in essaying a variety of subjects, and with such a variety of motives.

*Prometheus giving Life to the Statues with the stolen Fire* (16), by Louis William Desanges, is as regards its principal figure an adaptation from Raphael's 'Creation,' in the Loggia. The other parts are in conduct infinitely inferior. There is some good drawing in the female figure; while the next male one is exaggerated and forced in action. The picture has able contrast of light and dark, as well as variety in the warm and cold tints.

Another allegory has been furnished by Mr. S. Bendixen in a composition which he entitles *Ireland in the Year 1847* (19)—its subject being the miseries with which that country has been visited by the failure of the food for the culture of which she is renowned. Though one in which our sympathies are so deeply engaged, the painter has not succeeded in imparting to it the quality of true pathos. It excites no feeling of commiseration; and is wanting in that individuality of physiognomy which marks the Irish race—and might have been conveyed without caricature. Allegories, if not rendered by a master hand and intelligible at a glance, are at best but hieroglyphics which the world will not take the trouble and time to decipher.

*Before the Altar of St. Edmundsbury the Barons solemnly swear to procure from King John the Restoration of the Saxon Laws of Edward the Confessor, as promised by Charter of Henry I.* (21), by James and George Fogg—gives no evidence of such powers as would justify the attempt to take a lead in Art or Art questions in a country like ours.

There are two pictures of W. E. T. Dobson. *Lamentation* (23)—a group of academic studies composed with that sense of apprehension which marks the earlier essays of the student—has some good passages of drawing and expression. Of the latter an excellent instance is the head of the principal female figure. In the large picture of *Boadicea meditating Revenge against the Romans* (25) a better style is discernible. There are a good sense of composition, draperies well cast and drawn, good colour, and careful painting. Mr. Dobson gives high promise for the future.

Mr. G. M. Moore's *Agricola instructing the Britons in the Arts of Peace* (26) is a picture learned in its details. All that attention to archæology in architecture, costume, and other accessories could effect has been given:—but it has little vitality as a whole, and is unimpressive as an illustration of the incident. Mr. Severn's long residence in Italy would seem to have inoculated him also with the taste for allegory—judging from his *Allegorical Portrait of Her Majesty Queen Victoria as Victory* (29). This painter would seem to consider the British Oak as the home of Victory—from the peculiar action of the principal figure; who looks as if she had been climbing and were now perilously descending its branches. There is some good painting in the little angels who hover about the tree, wreathing victorious crowns and inscribing Victories on its bark—but they do not combine effectively. As a poetical rendering, the forms are too material to convey the illusion which the painter intended. In its likeness of the Queen the picture is not happy.

A work of greater pretension than *Queen Elizabeth Reviewing her Troops at the Camp at Tilbury* (30), by Mr. F. M. Joy, it seldom falls to the lot of critic to notice,—and, it may be added, where such pretension was worse founded. No one condition of historic representation is here complied with. The painter seems to have deluded himself into the idea that a bold, obvious arrangement, seconded by some power of execution, which, as a painter of whole-length portraits, he has acquired, were sufficient arms for the contest proposed by the Royal Commission. In what his work is deficient he may learn by reference to that of one of his competitors. A careful perusal of Mr. Cross's 'Richard Cœur de Lion' will show him, without travelling back to the old masters, how much honesty of intention and of practice are necessary to the production of Fine Art—that a great work is not to be effected by stenography or any sleight of hand.

Mr. Frank Howard has contributed *The Night Surprise of Cardiff Castle by Ior Bach*; where he compelled Robert Duke of Gloucester, the son of Henry the First to sign a treaty, and to ob-

tain the ratification by the King, that the Welsh should be governed by their own laws (32). In this picture is evident a power of dramatic conception that can reveal the intention of its subject. Mr. Howard's plans are in reference to the disposition of the parts sensible enough; but the failure is in their elaboration—not here meant in the sense of mere high finish, but in that of developing fully the several details that give variety of individual character, variety of tint, and truth of colour—local as well as general. There is no want of fancy—but of attention to individual fact. The picture does not look as if studied from nature.

*Theseus taking leave of his father Ægeus previous to his departure from Athens with the Cretan Victims* (33), by Mr. Henry Herbert White is ambitious in design—poorly drawn—and respectably coloured.

Mr. Eyre Crowe, in *The Battle of Agincourt* (35), may possibly have thought confusion a necessary element towards the realization of such a scene. He has, accordingly, produced so much of what is involved and perplexing—aided by no arrangement of light or dark to bring out some forms or subdue others—that the eye cannot rest on any point. The picture is so minute in archæological details as to appeal more to the antiquary than to the lovers of Art.

*The Charity of Matilda, Queen of Henry the First* (36) by Mr. J. G. Waller is well designed—in groups that show every difference of condition claiming the noble lady's bounty. The blind, the lame, the widow, the aged, the sick, the infirm, offer in their aggregation the materials of great variety and contrast. The subject is not so well rendered by its drawing. The forms are flat, and have an unfinished look; and the colour is monotonous. Mr. Samuel West, in *Chaucer at the Court of Edward the Third* (37), has made a great advance on any former work of his that we remember. The choice of subject was a happy one as regards the epoch and the personages it brings before us. The picture represents no particular incident in Chaucer's life; but shows him merely in the enjoyment of royal patronage. It is arranged with a science productive of striking effect,—and this where there is no positive action. There is much propriety of sentiment in the group of royal personages, with Queen Philippa at their head, who receive the Poet. The work gives high evidence of Mr. West's capacity for historic treatment. In all its technicalities it is wrought with knowledge—and it deserves the consideration of the Commission in some substantial form.

*His Highness Oliver Cromwell, Lord Protector, refusing the Crown* (38), by Mr. N. J. Crowley, is excellently arranged in respect of the quality and power of telling its own story. It is one of the few works here in which the artist seems first to have taken a common-sense view of the task proposed in the elucidation of the text. The ordering of the action and the grouping of the different personages at once reveal his tale. The principal figure is well contrived and effective; the groups are well arranged and coloured.—This painter, too, has endeavoured in the mechanical part of his work to produce an effect analogous to fresco by the aid of some volatile medium or other—which in the present instance has no disagreeable result.

There are some clever painting and good passages in this composition, by Mr. Herbert Luther Smith, of *King Henry the Fifth re-establishing Sir W. Gascoigne as Lord Chief Justice* (39). Its execution is fluent and smart; and the whole bears evidence of being the work of one who is long practised in his art.

Mr. W. Cave Thomas's *Allegory of Justice* (40) will we fear disappoint those who remember his clever cartoon of the 'Conversion of Ethelbert to Christianity' in the first Exhibition in the Hall—as well as his subsequent cartoon and fresco. The present picture is cold and unimpassioned in aspect—in its allegory recondite and unintelligible—and in its language hard and severe;—wanting also in technical amenities. Mr. Thomas has sufficient talent to render himself independent of imitation; and had better, with such powers, if he will select, recur to the best examples of the best times than adopt the restricted views of a modern northern school.

In Mr. John W. Walton's *Infancy of Shakespeare*

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(41) there is better design than colour or expression. Mr. O'Neill's *Scene from Paradise Lost* (42) would have exhibited the painter's powers better if executed on a smaller scale.

Mr. Marshall Claxton's *Burial of Sir John Moore, at Corunna* (45), has much solemnity of character, and is rendered impressive by a good tone of light, as well as by the contrasted lines produced from the horizontal forms of the dead hero and the rectilinear ones of his mourning comrades. The drawing is unstudied and the execution slight: but knowledge of the resources of the palette is shown, and the deficiencies are those evidently occasioned rather by haste than by any want of talent on the part of the painter.

#### THE COMPETITION AT WESTMINSTER HALL.

On the principle of giving a hearing to all sides of a question, and because the following letter has in it something which we recognize as truth, we find room for it in our columns—though by no means adopting its general argument.

July 8.

Clause 5 states that pictures sent in for competition must come "under the general classes of Religion, History, and Poetry"—and clause 6 states that in the conditions "the size of the figures is altogether left to the choice of painters of marine subjects, battle pieces, and landscapes." Were there no "marine subjects, battle pieces, or landscapes" more worthy of premiums than some three or four of the inferior prize pictures? Is there not as much room for poetry in an accomplished representation of the beauties or sublimities of Nature as in an academic juxtaposition of arms, legs, and vulgar heads, designed to illustrate some meaningless portion of common history? Is a conquest of the mere technical difficulties of anatomical drawing to be perpetually thrust upon us as the only point in Art worthy of national patronage? Is every thing in Art to consist in mockeries of the works of the old masters—nay, even their quaintnesses and peculiarities—to gratify the German taste now sought to be fostered in this new parliamentary hotbed? Is every student to be forced into heroics that he may sink into an indifferent portrait-painter hereafter?

Circumstances created the old masters, and circumstances are forming an English School of Art, which this little legislative episode, with all its courtly machinery, can only turn aside for a moment. Why should we be forced to strut about in foreign guise, instead of looking at Nature for ourselves? Prize poems and prize pictures do very well for schoolboys;—but pictures painted to rule, however successful, no more indicate the real strength of the artist than a few pages of passable Latin verses make a true poet. It is all acting from beginning to end; and the matured and established artist ought to set his face against the system. It is rotten at heart, and no good can come of it. Byron and Moore owe nothing to Homeric stilt. Wilkie and Turner put forth their energies to the best purpose when they sought nature in the cottage and on the mountain.

Away, then, with these German affectations,—and let the Arts flow again in their legitimate channels! There is plenty of scope for originality and true greatness without treading in the footsteps of the old masters. Raphael and Da Vinci did not mock the Greeks,—and why should we be compelled to ape the Italians?

Such a system can never beget a school of British Art; and the British public know and feel this truth. It is a mistake,—and should be put a stop to ere a number of ingenuous youths fall a sacrifice. The patronizing hand which throws hundreds of sovereigns into the lap of the selected artist will be withdrawn when his task is finished. The heart which now seems to yearn towards him will soon cool in its sympathies. Then away with the system altogether. "Hence, horrible shadow,—unreal mockery, hence!"

FINE ART GOSSIP.—We have at length before us the Report of the special committee of the Council of the Government School of Design appointed so far back as November in last year to consider and report upon the state and management of the School. The Report is accompanied by an appendix containing the evidence of the gentlemen who were examined by the Committee:—and to both we shall devote some consideration for the purpose of bringing the

matter, with our own views thereon, before our readers, as we have formerly promised.

The evening meetings at Messrs. Colnaghi's to do honour to the Chevalier Toschi on Saturday and Wednesday last, were, as we anticipated, largely attended by his professional brethren. We observed there most of the members of the Royal Academy, amongst a large assemblage of others interested in Art.—The Parnesian President is on a visit to this country to superintend the publication of his series of engravings from the works of Correggio, at Parma. The Messrs. Colnaghi had decorated their rooms with water-colour copies by the Chevalier of Correggio's frescoes in that city.

In reference to the remarks in our paper last week on the existence of a claw in the tuft of the lion's tail,—a correspondent has called our attention to the fact that, besides the authorities mentioned by us, there is an interesting paper on the subject in the 'Edinburgh Philosophical Journal' by Prof. Blumenbach. Of this paper we were aware: but our former correspondent did not think it necessary to refer to more authorities than the original discoverer, Didymus, and the last witness Mr. Bennett—who, as we stated, produced the claw at one of the meetings of the Zoological Society in 1832. Blumenbach is mentioned, among other witnesses, in Mr. Bennett's paper.

The French papers mention a singular and unfortunate accident which has befallen a valuable collection of works of the ancient masters—including those of Rubens, Albert Durer, Holbein, and Raphael—the property of M. Demidoff. The steamboat in which the cases were embarked for removal to Italy was upset between Châlons and Mâcon; and forty-eight hours elapsed ere they could be recovered from the river. They have suffered grievous injury—but are said not to be beyond the reach of complete repair.

There have been great doings at Breslau for the inauguration of the equestrian statue of Frederic the Great, in presence of the King and Prince Royal of Prussia. The group is the work of the celebrated Berlin sculptor Kiss,—and stands in the Cathedral square. Among those present at the ceremony was an aged soldier who had served in the armies of the great King—as it has been agreed to call him—and had furnished up for the occasion his old Prussian uniform of the Seven Years' War.

#### MUSIC AND THE DRAMA

ROYAL ITALIAN OPERA, COVENT GARDEN.—The Nobility, Subscribers, and the Public are respectfully informed that a Grand Extra Night will take place on THURSDAY NEXT, July 15, on which occasion a Grand Opera will be performed, in which the following celebrated artists will appear, Madame Grisi, Mdle. Alboni, Mdle. Steffanoni, Signor Mario, Signor Tagliandini, Signor Salvi, Signor Tamburini, Signor Martini, &c. &c. Conductor, M. Costa. To conclude with a New and Grand Ballet, in which Mdle. Fucio will make her first appearance, supported by Mdles. Baderna, Berlin, De Melaine, Delecheux, Stephan, Duvai, M. Mahille, &c. Tickets, Stalls, and Boxes to be had at the Box Office (in the Theatre), Bow-street, and at Messrs. Cramer, Beale & Co.'s, 201, Regent-street. The Doors will be opened at Half-past Seven, and the Performance commence at Eight o'clock.

THE MUSICAL UNION.—At the Eighth Meeting (the *Matinée* noticed a fortnight since having apparently been a supplementary one) Madame Duicken's playing, without book, of Dr. Spohr's Piano-forte Quintett with wind instruments, here arranged for stringed ones, was too excellent to pass without special notice. The composition loses by the alteration; albeit it is sanctioned, we are told, by the composer. The phrases given to the original quartett which join the pianoforte sound languid when performed by the more piquant violin, viola, and cello. The charm of contrast is destroyed, and the work assumes far more of the character of a *solo* than in its pristine form. This, however, made it none the worse for the lady,—who played like one inspired by the presence of the composer. She was accompanied by the brothers Helmesberger, M. Deloffre, and Sig. Piatti. Young Joachim, too, led Beethoven's Quartett in a major:—so that the meeting passed off with more than usual spirit.

HER MAJESTY'S THEATRE.—We so fully discussed the violent and matter-less music of Verdi's 'I Lombardi' last year [*Athen.* No. 968] that it were time lost to enter upon the subject *apropos* of the revival of the music on Tuesday last. Enough to say, that of a work so flimsy and so full of pretence an opinion is

neither hard to form nor easy to change. The parts filled last year by Madame Grisi and Signori Mario and Fornasari, fall this time to the lot of Madame Castellan and Signori Gardoni and Coletti. The lady sang like one dispirited and who loves not her occupation; becoming early in the opera painfully false in intonation, and only partially recovering herself. But a *sesquialtra* organ-stop in female form, not a *soprano* voice, is wanted to go through the part of *Giselda* with comfort and effect. Signor Gardoni was encoined in the gentler movement of his *cavatina*. Signor Coletti, fine and energetic artist as he is, could not give life to his dreary music, nor quicken with interest a walking character so grim and ponderous as that of *Pagano*. The orchestra gets worse, in place of better. When most correct, it was in that state of independence of the singers which must add seriously to the difficulties of the latter; once or twice it was at serious variance with the chorus. There was no military band on the stage, as is demanded by the score. The effect produced by its use is not a favourite one with us: but when the usual orchestra is substituted for it, all procession music, &c. goes flatly, and all contrast is lost while very little noise is spared. 'I Lombardi,' however, is only wanted for the "off nights," when Mdle. Lind does not sing and the theatre is sparingly attended. It may probably, therefore, answer its purpose as well as a better work better performed. The *Morning Post* tells us, that Signor Verdi's new opera 'I Mesnadieri' is in rehearsal:—also that Mdle. Taglioni has arrived.

ROYAL ITALIAN OPERA, COVENT GARDEN.—Whereas 'Don Giovanni,' 'Il Barbiere,' and those "lesser lights" 'Norma' and 'Lucrezia' have not lost their attractiveness by repetition, two performances of Verdi's 'I due Foscari' have been found amply sufficient for public curiosity, and we imagine that our denial of the claims of 'Ernani' to be considered a stock-piece, will also be justified by the event,—well performed and well received as was that best of Verdi's operas this day week. No *prima donna* of recognized supremacy as a vocalist seems willing to adventure in the part of *Eleira*. It fell, on the present occasion, to Mdle. Steffanoni for her *début*. The fact claims attention for more reasons than one; since we must hear the lady in music less exhausting and affording finer vocal opportunities ere we can without hesitation decide upon her merits. Meanwhile, it is past dispute that she has a "comely presence" and a *soprano* voice some two octaves and more in compass,—which seems even rather than clear or powerful, and, though well in tune, not so firm as a voice should be. Mdle. Steffanoni sang the opening *cavatina*, 'Ernani involami,' better than it has been given in England,—exhibiting a brilliant shake on *r*, and executing an ascending scale with considerable aplomb. She was anticipated in repeating the *cavatina* by a violent *encore*. From this point, however, the lady produced less effect than her *aria* had led us to expect, until the final *trio*. For this it is possible she may have reserved herself: since before reaching it, every other *Eleira* in our recollection has screamed herself out,—whereas this day week it was sung with so much *brio* as to be *encored*. On the whole, the impression left by Mdle. Steffanoni does not warrant us in congratulating the world on a new *prima donna*. But that we know every Lady's motto in these days of struggle to be "Let me play Thisby, too!"—and that but that we are charmingly provided in Mdle. Corbari,—we should welcome the new singer as a first-class *Jane Seymour*, *Dorabella*, or *Adalgisa*.—Let us repeat, however, that in music where the vocalist has more to do and the voice less to cry it is possible that Mdle. Steffanoni may display individualities justifying a different classification.

Failing Signor Ronconi, for whom the music is too low, and Signor Tamburini, who seems to share the universal disinclination to sing in Verdi's operas, the part of *Carlo Quinto* was arranged for Mdle. Alboni. When she is in the question, one cannot say that the best expedients of the kind "are but shadows"—but Mdle. Alboni, at her best, is less acceptable under such circumstances than a steady, working *basso* would be; since the musical effects more or less suffer from substitution of one voice for another and the modifications necessary. And such experiments ought not to be made by a management professing

itself careful of musical integrity. Though Mdle. Alboni's declamation was throughout admirable, and though the hard work of the part by falling on her mezzo-soprano notes developed a force and flexibility in her upper register unprecedented in any *contralto* of our acquaintance, we felt the loss of contrast in the great concerted pieces at the end of the first and third acts—especially in the former. The audience, however, was less nice: both were *encored* with every appearance of satisfaction.

The best singing in the opera was Signor Salvi's. This excellent artist is hardly appreciated as he deserves. Because he has no mannerisms, and few flashes of genius, the public is too apt to forget that he is one of the most irreproachable vocalists we have ever had in London. In particular now, when most gentlemen choose to sing in two voices—their own and a *falsetto*—all tenors and many baritones would do well to study the manner in which Signor Salvi produces his *altissimo* notes, and blends them with those of his natural register. Signor Marini was the *Ruy Gomez*,—as heretofore, oppressive and unfriended: the largest example to be cited of the insufficiency of the modern school of Italian training: since he owns gifts which, if genially improved, might have entitled him to the "succession" of Lablache. The opera went well, save for one slip in the chorus,—which we notice as the solitary blunder we have heard during the season.

'Anna Bolena' was given with great care for the benefit of Madame Grisi on Thursday evening. Probably the lady herself never sang with greater power, passion, and brilliancy—never acted the part so finely: assuredly, she was never so enthusiastically received. Signor Tamburini is the only *Enrico* who could attempt the part with any hope of satisfying the public—while Lablache is in London. Mdle. Alboni was the *Smeaton*, Signor Mario the *Percy*, and Mdle. Corbani the *Jane Seymour*. The scenery and dresses were gorgeous—and the music went as music goes at Covent Garden; but the opera in itself is not one of Donizetti's best,—the composer not having found his own style (whatever that be) at the time when the work was written.

A *divertissement* was produced this day week for the introduction of Mdle. Plunkett; who, since her last feats in London, has been promoted to the rank of a *premier sujet* at the *Paris Académie*;—more, however, owing to her prettiness, and, we may add, the poverty of that establishment, than because she is first-rate, either as a *dansuse* or as a pantomimist.

**HAYMARKET.**—Mrs. Nisbett's re-engagement at this theatre making some sort of novelty needful, Murphy's comedy of 'All in the Wrong' was revived for the purpose of exhibiting this charming actress in the part of *Lady Restless*. Murphy, it is well known, derived the plot and persons from Molière. The English play is in all respects substantially the same with the French '*Sganarelle, ou le Cocu Imaginaire*.'—but what is a lively enough affair in Molière's one act, becomes a rather heavy business in Murphy's five. A plot which turns on the fact of each of the characters being jealous might prove very amusing in a brief farce, but the monotony of the subject is all but fatal to a full-proportioned drama. This revival is, however, interesting, as it exhibits Mrs. Nisbett in a new character—and one eminently suited to her talents. *Belinda* was performed by Miss Julia Bennett; who is often contented with looking pretty,—but on this occasion set herself in right earnest to act, as if in emulation. We have likewise to mention with encomium the *Sir John Restless* of Mr. Webster—a character out of his usual line, and now performed by him for the first time. It was distinguished by many admirable attributes:—by an occasional tact which, if not genius, revealed a remarkable aptitude for certain unique effects. The remaining parts belong to the circle of light comedy;—and unfortunately the histrionic talent of this company is not in that direction.

**ST. JAMES'S THEATRE.**—Though the peculiar range of Mdle. Rachel's genius affords her warmest admirers (among whom we may be counted) little new to say with regard to her gifts and graces,—the more, since during her last visit we followed her performances closely and analytically,—no lover of the high old French Drama can let her alight on our stage

for the most passing visit without a warm welcome. That in London she is seen to less advantage than when on her own throne, is neither her fault nor ours—least of all, her manager's. Our English sympathies with the "curiosities" of her declamation must needs move more slowly than those of a Parisian audience;—nor is such support as she receives in the Rue Richelieu (doleful and bombastic at best!) attainable in King Street, St. James's. Further, this year Mdle. Rachel has to electrify a fatigued and pre-occupied public,—to give an effervescence, as it were, to the dregs of the season. Let these drawbacks be all allowed for, our guest is still unapproachable, and cannot be amongst us without making an impression:—let us hope, too, a very decisive mark in the Golden Book of the most liberal of managers.

**MUSICAL AND DRAMATIC GOSSIP.**—Among the music of the past week which claims record rather than criticism, must be mentioned the performance of Beethoven's contributions to 'Egmont,' under the auspices of Mr. Müller;—also, the rehearsal, on Saturday last, of Prof. Walmisley's 'Installation Ode.' We cannot but call attention to the Laureate's share in the work, many stanzas of which, apart from any question of poetical merit, deserve high praise for their adaptability to music.—Here, too, we may mention the concert which was to be given, last night, by the Italian singers, for the Italian schools.

Musical persons and pilgrims of every degree will be glad to hear that the lesseship of the Grand Opera of Paris has been yielded up by M. Pillet, and his successors appointed. These are MM. Duponchel and Roqueplan. The theatre will be closed for a time, to undergo a complete reparation. An entire reorganization of the company, too, will be necessary, for which materials—and difficulties, we must add—seem to present themselves on every side. The French, albeit they would "open eyes" with a vengeance were they accused of want of patriotism and nationality, seem just now *crazed* with a desire to sing Italian. Were matters otherwise, London could furnish two useful reinforcements of the decayed *troupe* in Madame Castellan and M. Bouché; to say nothing of that admirable tenor, M. Roger,—who, we believe, has just left England, to sing for a few nights in Belgium. In any case, the reign of Bad Management is over,—and we are a step nearer the release of the long-talked-of and long-locked-up operas of M. Meyerbeer.

Who can allude to the reserve of Europe's great musicians ever so casually without glancing at Bologna—where Rossini reigns in the glory of *inertia*? It is true that recent visitors describe the *maestro* as occupying himself from time to time in the concerns of the *Conservatorio* (whence, if we mistake not, came that best of modern Italian singers, Mdle. Alboni)—and this is something to recognize thankfully. But we never hear a whisper about new composition from Rossini which is not followed by its real history of mystification, indifference, &c.—such as, to say the best of it, seems in very bad taste. The journals were some months ago congratulating the world on its being richer by a Hymn in honour of the new Pope. We thought of 'Robert le Bruce,'—and were afraid to believe; and now comes the truth in a report quoted from *La Gazette Musicale di Milano*, in a French journal, respecting an *academia* given at the Teatro de la Canobbiana for the benefit of a Philharmonic institution. At this, three Hymns in honour of His Holiness were performed:—one by Rossini. "To satisfy the curiosity," says the journalist, "which all the new compositions bearing Rossini's name excite at the present day, it would be necessary to state when and how the great *maestro* wrote his hymn. This is, in reality, a melody from 'La Donna del Lago,' with a new introduction, new instrumentation, and a new close. It is clear that these are not mere chance-work—they bear the stamp of Rossini. Some say that the chorus was thus arranged for Turin, where it was executed some time since, in honour of Torquato Tasso;—since when the words have been changed so as to suit Pius IX. But was the close, which above all is effective, written for the hymn or for 'Robert le Bruce'?—since it is certain that there it stands in that '*noble pasticcio*.'" Was the close aforesaid written by Rossini at all,—we venture to ask—if such be the first au-

thentication of its existence? Or is it merely one of clever M. Niedermeyer's patchings,—so strangely in public accredited by the listless composer,—so cynically in private disclaimed by him, unless Rumour be a greater gossip than usual?

A singing festival has been just held at Ghent, in humble emulation of last year's great meeting of the associated German and Flemish singers at Cologne. Complaint is made of certain Belgian vocalists from remote towns, who availed themselves of the free railway transit, to repair to Ghent and enjoy the *Kirmesse*, without thought of rehearsing, or power to take part in the performances *laughing* such needful preparation. If this be so, their "bad manners" can hardly be too widely commented upon by those who love good music: since by attaching public shame to such inartistic greediness, its exhibition on future occasions is rendered difficult, if not impossible. The meetings were held in the *Hôtel des pas Perdus*, and the executants nominally numbered 1,500.—At the second meeting Dr. Spohr, who chanced to be passing hitherward, (and in honour of whom, let us here add, a concert has been recently arranged at the Brussels *Conservatoire* by M. Fétis, was present,—and was received with an ovation of cheers and bouquets.

Auber's 'Acteon' has been revived at the *Opéra Comique*, Paris. Competent witnesses assure us that the tale of La Princesse de la Trémouille's dramatic intentions can but be a fabrication designed to "make talk" in the salons and journals.—Three new actresses—not before novelty was wanted—have just made their appearance in Paris,—Mdle. Holbein and Mdle. Daubrée at the *Français*, and a negress at *Les Variétés*—the theatre of Vernet and Lafont and Bouffé and Dejazet. Let our neighbours no more shrug their pitying shoulders over our Ethiopian fancies!—Mdle. Lind is said to have accepted an invitation to sing at Berlin in September next.

#### MISCELLANEA

**Paris Academy of Sciences.**—June 28.—A notice was read by M. Magendie on the recurrent sensibility of certain nerves, showing that a nerve may under certain influences lose for a time its sensibility, and recover it.—Another note on the character of the blood in scorbutic patients: and a paper by M. Filhol on the relation that exists between atomic weight, the crystalline form, and the density of bodies.—A communication was received from M. Raux, giving an account of two operations of lithotomy on etherized patients, one of them 22 years of age, the other 80.—A letter was received from M. Sace, of Neuchâtel, in Switzerland, giving an account of some experiments in the feeding of domestic fowls. He states, first, that fowls to which a portion of chalk is given with their food lay eggs the shells of which are remarkable for their whiteness. By substituting for chalk a calcareous earth, rich in oxide of iron, the shells become of an orange red colour. Secondly, he informs us that some hens fed upon barley alone would not lay well, and that they tore off each other's feathers. He then mixed with the barley some feathers chopped up, which they ate eagerly and digested freely. By adding milk to the food they began to lay, and ceased plucking out each other's feathers. He concludes that this proceeding arose from the desire of the hens for azoted food.

**The Surtees Society.**—July 3.—Probably the publication of this letter in your columns (if you will do me the favour to give it a place therein,) may elicit a reply to the question "What is the Surtees Society doing?" This association, as you know, was founded A.D. 1834: having for its object the publication of unedited MSS. illustrative of the intellectual, the moral, the religious, and the social condition of those parts of England and Scotland which constituted the ancient kingdom of Northumbria. The last volume published by the Society appeared in 1845 (being the first of the two publications due for the year 1844); the Society having then published eighteen volumes, the contents of which are for the most part of great value to the antiquary and historian. An account will be found in the *Athenæum* for 1845, p. 1057, of the good resolutions and promises made by the Council at the Anniversary Meeting in that year; and the non-payment of arrears of subscriptions being then declared to be the principal impediment to the literary operations of the Society, the secretary in April 1846 called upon members to pay their arrears and subscription for the current year by a day in the ensuing month (May, 1846)—and informed them that the second of the publications for 1844 and the works for 1845, all then in the press, should be transmitted at the time of publication. J. for one, paid my subscriptions for 1845 and 1846, accept-

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ingly,—and other members did the same; but not a volume has been delivered since the publication of the second of the volumes for 1844. For anything that appears to the contrary, the rule which requires payment of annual subscriptions in advance is, therefore, the only rule to which the Council has directed its attention. By the rules, certain members are to be called upon annually to recommend MSS. for publication,—accompanying their recommendation with analyses of the MSS. recommended, of which analyses a condensed printed account is to be transmitted to each member, by the secretary, in order to obtain the sanction of a majority of the members to the publication of any MS. approved by the Council. This is the third year of my membership, and I have not received any such account, nor heard from the Council except when my subscription was demanded. The members of the Council appear to have been for some time past exercised by the secretary; who, though a reverend and learned person and an excellent editor, is an inactive functionary:—and if the management of the Society be not reformed and made more vigorous, its useful objects would be more beneficially attained by the transfer of its means to another association. Such is the opinion of

THE SHADE OF ROBERT SURTEES OF MAIDENFORD.

**Improved Locomotive Engine.**—For some time past considerable attention has been excited among parties connected with locomotive transit by the performance of an engine built upon a new principle by Mr. Crampton, civil engineer [see *Athenæum*, ante, p. 391].—and upon which very extensive experiments have lately been made on the London and North-Western Railway. The engine in question which has been for a few weeks taking the express, mail, and ordinary trains on that line, and performing its work in such a manner as to effect a saving of from 20 to 50 minutes in a through distance of 50 or 60 miles, was tried last week without a train, for the purpose of testing its rate of speed: when it was found that with Capt. Coddington, Inspector-General of Railways, Capt. Simmonds, Assistant-Inspector, and the patentee, Mr. Crampton, on the engine, it attained the extraordinary speed of 75 miles per hour, on a level, immediately after surmounting a rising gradient; and that at this great rate there were a total absence of all vibration, and a steadiness of movement perfectly surprising. These great advantages are effected in Mr. Crampton's engine by the centre of gravity being brought down to its lowest possible point; the boiler, in fact, being, in this machine, within 2 feet 9 inches of the rails, whilst in engines of the old construction it ran, at the very least, 5 inches above their level. The peculiarities of this engine consist in the driving-wheels being placed at the foot-plate end of the boiler; by which means the boiler itself can be brought down close to the supporting axles of the engine—and, from the peculiarity of form before mentioned, any size of driving-wheel may be used without interfering with the position of the boiler, so that longer boilers can be used if necessary. Another advantage secured by this method of building engines is that no part of the engine overhangs the wheels; inasmuch as the fire-box is extended under the boiler and driving-axle,—by which also the distance between the extreme wheels is reduced 3 feet. The engine in question, the *Namur*, has only 13 feet between them, whilst in ordinary engines the same amount of power would require 16 feet. In addition to these advantages, the driver has the whole of his machinery in view at one time, and in no case is required to get under his boiler for repairs. So satisfactory have these and other trials been, that the North-Western Company have ordered of the patentee an engine of a power nearly equalling that of the monster engine on the Great Western Railway; which it is thought, when completed, may perhaps by its performances tend materially to set at rest the long-pending dispute as to the superior eligibility of the broad or narrow gauge.—*Times*.

**Counting a Billion.**—What is a billion? The reply is a very simple one—a million times a million. This is quickly written, and quicker still pronounced. But no man is able to count it. You count 160 or 170 a minute; but let us even suppose that you go as far as 200, then an hour will produce 12,000; a day, 288,000; and a year, or 365 days (for every four years you may rest from counting, during leap year), 104,120,000. Let us suppose, now, that Adam, at the beginning of his existence, had begun to count, had continued to do so, and was counting still, he would not even now, according to the usually supposed age of our globe, have counted near enough. For to count a billion he would require 9,512 years 34 days, 5 hours, and 20 minutes, according to the above rule.

Now, supposing we were to allow the poor counter 12 hours daily for rest, eating, and sleeping, he would need 19,024 years, 68 days, 10 hours, and 40 minutes!—*American Literary Gazette*.

**A Handsome Invitation.**—Punch gives the following as the expenses of a gratuitous visit to Blenheim when thrown open to the members of the British Association:—

	£.	s.	d.
The very civil gentleman who shows the keeper's lodge .. .. .	a fee of	0	5 0
The gentleman on a fine horse who accompanies parties through the park, giving the names of the trees, and remarking that "it is a very fine day" .. .. .		0	5 0
The gentleman who shows the garden .. .. .		0	5 0
The gentleman's gentleman who shows the kitchen ditto .. .. .		0	5 0
The urbane gentleman who takes care of your umbrella, and never takes anything but silver ..		0	2 6
The lady who opens the gate .. .. .		0	2 6
The noble lady who is condescending enough to describe the picture as quick as she can, so as to have finished with the stupid business as soon as possible (a deduction upon taking a quantity) .. .. .		0	5 0
Incidental expenses to endless little boys and girls, "pampered menials," &c. .. .. .		0	10 0
Total per head (very cheap) .. .. .		2	0 0

The above does not include any gratuity to the Duke of Marlborough.

**A Machine for Printing Twelve Thousand Sheets per Hour.**—We were shown some time since the model of a printing machine, which we have little hesitation in designating a stride in the already wonderful progress that has been made in the printing art during the last five-and-twenty years. The steam-press by which the *Daily News* is printed is, we believe, the fastest,—because the newest, and, consequently, provided with the latest improvements,—at present in existence; yet, the average number of copies it produces within the hour is 5,000. The improved machine is calculated to print upwards of 12,000 per hour; and after a careful examination of the model, we have every reason to believe that the calculation is correct.—To persons unacquainted with the details of printing machinery it will be next to impossible to convey a complete idea of the improvement, simple as is the principle on which it has been effected:—a general notion may, however, be given. For the benefit of the uninitiated, we must premise that the present printing machines consist of two principal parts: first, of a sliding table, the middle of which is occupied by the type, each end having a surface on which the ink is distributed, and from which it is taken up by soft elastic rollers, and imparted to the type; secondly, of cylinders constantly revolving, to which the sheets are conveyed by tapes, impressed by the periodical sinking of the cylinders upon the type, and conveyed away again by the tapes. By the present plan, as the impressing cylinders revolve in one direction, an impression can only be taken at each forward transit of the type; the cylinders being lifted, to clear the type as it travels back again. In other words, the type passes under each cylinder twice to produce one impression. The new, or, as it is aptly termed, "The Double-Action Machine," takes advantage of both passages of the type under its cylinders, printing a sheet as the type passes backward as well as when it goes forward. This is managed by reversing the revolutions of the cylinders at each stroke, simply by means of straight racks placed upon the long edges of the table, in which work cog wheels attached to the axles of the cylinders. In this double action resides the main feature of improvement. It not only allows of two sheets being printed for one, but—by disencumbering the steam-press of the machinery necessary for lifting the cylinders that they may clear the table at each return—admits of the introduction of eight cylinders into the machine instead of four, the present maximum number. By this accession seven sheets are printed in the time of four—the natural supposition would be eight sheets; but a peculiarity which it would be impossible to explain in this paragraph prevents the double action being imparted to the two outside cylinders, which constantly revolve, as of old, in the same direction,—and reduces the ratio of production one sheet per stroke of the machine. The inventor is Mr. William Little, publisher of the *Illustrated London News*.—*Daily News*.

# SEVENTEENTH MEETING OF THE BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

[From our own Correspondents.]

In performance of the promise which we made last week, we give the speech of thanks delivered by M. LEVERIER at the concluding General Meeting of the Association.

Mr. President and Gentlemen.—In its seventeen years of existence, the British Association has achieved great and deserved celebrity throughout the whole extent not only of Europe but of all the civilized world. The important services which it has rendered, and promises to render, to science are eagerly recognized to-day by every true friend to the progress of the human mind; and the tribute of gratitude which we [the foreigners present] now pay is but a faint echo of the great voice of public opinion.

The truth is, Sir, that the scientific titles of the Association are many and of many kinds. It has acquired an auspicious influence over the study of the Sciences which it will retain and extend. Shall I speak of the labours which have been brought together here from all the corners of the world to make themselves known, analyzed, and accepted by means of discussion calm but profound, friendly yet severe and impartial, in the several Sections. The recollection of these discussions alone will suffice to assure all those who had the satisfaction to be here present of the great importance of this Association.

But this is not all. By the institution of your published 'Transactions' you have extended the benefits of the Association to all the scientific world;—to those who, less favoured than ourselves, have not had the advantage of being personally amongst you.—This brotherly union, in which for a week of every year the members of the Association are met as if they formed a single family, cannot fail to produce a diffusion of ideas and encourage a cordiality of sentiments which must have a wholesome action on the cultivation of the sciences. From the conflict of personal opinions is struck light, stronger in proportion as the several bodies producing it approach more nearly to each other; while on the other side, those asperities which are apt to be the accompaniments of personal contradiction disappear completely from the arguments which men discuss with clasped hands. Again—all the natural and mathematical sciences are sisters:—and while each one demands the particular and constant worship of him to whom especially she opens up her treasures, none can be separated from the others without the loss of important aid and the sacrifice of that poetry which resides in the connexion and *ensemble* of the many branches of human knowledge. The British Association may well be proud to see thus bound together, under its auspices, Geology, Astronomy, Anatomy, Natural History, Chemistry and Botany—represented by Buckland, Herschel and Airy—names which are the honour of England.—Struve, Hamilton, Adams, Owen, Ponape, Ehrenberg, Faraday and Robert Brown. These advantages have not been overlooked by the Minister who is at the head of Public Instruction in my own country. The Grand Master of the University of France—whose firm and enlightened support has never been wanting to science—charged my comrade Milne Edwards and myself on coming amongst you to offer you the homage of his private sympathy, as well as to make an exact report to him of the proceedings of the Association. May the spirit of warm appreciation which has animated us in the fulfilment of our scientific mission have been responded to by your approval! The sympathy on our side can only be increased by the reception which we have had from all the members of the Association and the heads of the University of Oxford. Accept, Mr. President and Gentlemen of the Association, the thanks which we offer in the name of the University of France. Permit, too, my friend Mr. Milne Edwards and myself to express in our individual names the sentiments with which your cordiality has penetrated us. The memory of the Oxford meeting will ever be to us a precious one.—More than any other man, Gentlemen, I should rejoice to have come amongst you; since here I have had the satisfaction to make the personal acquaintance of Mr. Adams—who will, I hope, let me call him my friend. Like you, I shall delight in all occasions of rendering homage to his talent—sure that his zeal and devotion

to science will furnish me with many an opportunity of so doing.

SATURDAY, JUNE 26.

SECTION A.—MATHEMATICAL AND PHYSICAL SCIENCE.

'Report on Geological Theories of Elevation and Earthquakes,' by W. HOPKINS.—This report—a part only of which was read at the Mathematical and Physical Section, the remainder being read in Section C—embraces too wide a range to admit of our giving any detailed analysis. After having stated certain leading characters of volcanoes, both with reference to the fluid volcanic mass and its containing cavity, the author proceeds to the examination of theories of volcanoes. He regards the *chemical theory* proposed by Sir H. Davy, and the theory more recently proposed by M. Bischoff, as involving mechanical difficulties of the gravest character. In considering the theory which supposes existing volcanoes to owe their origin to the former fluidity of the earth, the author is led to the discussion of the general theory based on the hypothesis of such fluidity. He examines the evidence afforded in favour of this hypothesis by the accordance between the present ellipticity of the earth, as determined by admeasurement, and its mean density as determined by the experiments of Cavendish and Baily, and the calculated value of their quantities. He then proceeds to consider the mode of the earth's refrigeration and consequent solidification, and the probable extent to which the latter process has already proceeded. Supposing the earth to consist of a fluid central nucleus and a solid envelope, it is concluded that the thickness of the latter is probably not less than one-fourth or one-fifth of the earth's radius. This conclusion is drawn from the observed amount of the precession of the earth's pole with that calculated on the hypothesis just stated, respecting the constitution of the earth; but the author also indicated another method by which evidence might be obtained on this point. He showed that if it could be proved by experiment that the temperature of fusion of solid substances is generally increased, even in a small degree, by high pressure, we should have strong reason to believe in the entire solidity of the earth; and if, on the contrary, it should appear that high pressure has no such effect on the temperature of fusion, we should be led to conclude that the present temperature of the earth is not due to its original heat. He considered such experiments necessary for the further advance of this branch of geology.

'A Map of the Coast Survey of the United States,' from A. BACHE.

'Report on the Gaussian Constants,' by Prof. A. ERMANN.

'Report on Atmospheric Waves,' by W. R. BIRT.—The author in introducing his fourth Report on this subject observed, that in accordance with the resolution adopted at the last Meeting of the Association about thirty sets of observations had been obtained from various stations in the British islands; the extremes of the area embraced being the Orkneys and Jersey in one direction and Galway and Dover in the other. As instances of the increasing interest manifested on this subject, he remarked that he had been furnished with curves from stations in the north, where the barometric movements had been considered to result from the transit of the great November wave. Each of these curves was referred to the same period; namely, from the 2nd to the 17th of November; and the observers invariably regarded the regular rise and fall that occurred between these epochs as indicating a well-marked return of the great symmetrical wave.\* Mr. Birt, after noticing the remarkable circumstances under which the wave returned last autumn—so remarkable that they had no small tendency to mask the wave in the south-eastern part of the island—stated that the projected curve at London strikingly developed its essential features; the five subordinate waves were well seen, although the inflexions were not strong, owing to the small altitude of the wave on its last return, scarcely exceeding half an inch—its whole development occurring above thirty inches prevented the boldness of the inflexions particularly noticed on the occasion of its return in 1842. The author then proceeded to notice

the essential features of the curves as obtained from observations at Ramsgate, St. Vigean's, near Arbroath, east coast of Scotland, the Orkneys and Western Isles, Applegarth Manse, Dumfries-shire, Largs, Limerick, Galway, Helstone in Cornwall, and St. Helier's, Jersey. Our limits will not permit us to give in detail the resemblances and differences of these curves, exhibiting, as they do, the distribution of pressure around Great Britain and Ireland, which the author traced from the south-eastern point towards the north-west: but the report will be printed in the forthcoming volume of the Transactions. We may, however, here notice that attention was called to the principle which the author laid down in his report of last year, "that the barometric curve, including a complete rise and fall at any one station, does not represent any reality in nature, but is the effect of two or more systems of waves or currents moving in different directions and crossing each other at various angles." He also pointed out the great extent of oscillation (nearly double) observed in the north-west as compared with the south-easterly observations. The great wave commenced on the 2nd of November; at the northern stations it culminated on the 12th; at the south-eastern on the 9th; and it terminated on the 17th. In explaining the differences of epoch as indicating the transit of the crest being much earlier in the south-east than in the north, Mr. Birt remarked that the observations clearly showed that the barometer passed two maxima, one on the 9th, the other on the 12th; and that the whole extent of the British isles might be divided into two barometric areas, distinguished in one case by the superiority of the maximum of the 9th, and in the other by the superiority of the maximum of the 12th. A line passing between Arbroath and Newcastle, south of Dumfries, and between Ireland and Wales, separates these areas. North-west of this line we find the maximum of the 12th superior: south-east of it we find the maximum of the 9th superior. The maximum of the 9th Mr. Birt regarded as the central wave forming the crest of the great wave, and the maximum of the 12th he considered as the crest of the first subordinate wave on the posterior slope. The author next proceeded to examine the distribution of pressure as manifested by these observations; from which, in connexion with the features of the projected curve, he deduced the following results:—1st. The return of the great symmetrical wave. This occurred in the south-eastern angle of our island under very peculiar and remarkable circumstances. The area of greatest symmetry is closely in accordance with the results of former discussions, and goes far to confirm the result deduced from the examination of Sir John Herschel's hourly observations, "that Brussels is entitled to be considered as a point of comparatively gentle barometric disturbance, \* \* \* and may be regarded as in a certain sense a nodal point, where irregularities are smoothed down and oscillatory movement in general is more or less checked, and such movements increase as we recede from Brussels as a centre, especially towards the north-west." The curve of greatest symmetry was obtained from Ramsgate, the nearest station to Brussels. As we proceed towards the north-west, the symmetry is considerably departed from, especially by the greater development of the first subordinate wave on the posterior slope, by which the maximum of the 12th became superior. This portion of the wave formed a striking contrast to the similar portion in 1845, which was characterized by a considerable depression. It is not a little curious, remarked the author, and goes far to show that we are approaching the true explanation of the nodal character of Brussels, to observe that movements so dissimilar in their character, so opposite in their value, and presenting themselves under such a diversity of aspects, should, in a certain locality and on particular lines of country, manifest, by means of the barometer, constant and well defined phenomena, that may be recognized year after year, and which give to the curves of barometric rise and fall during the period of their occurrence a peculiar symmetrical appearance. 2nd. Two systems of waves or currents, one having a general direction of progress from the north-west, the other from the south-west, traversed the area during the period of the great wave. This is the same result to which we were conducted by an investigation of the symmetrical wave of 1842. The relative positions of the individual waves were

somewhat different from those of the wide bi-dual waves of 1842; but there were some striking points of resemblance. The north-westerly system in each case exhibited the largest wave, both as regards amplitude and altitude. The intervals between similar phases of north-westerly waves were nearly equal in 1842 and 1846. During the interval that elapsed between transits of these similar phases in 1842 and 1846 the same number of south-westerly waves passed over the area—and from the whole it appears highly probable that we have not only ascertained another return of the great symmetrical wave (the sixth) but have also detected the return of at least three of the individual waves contributing to its production. 3rd. The very precipitous fall of the barometer characterizing the posterior slopes of the north-westerly system, as developed by the discussion of the observations of 1842, is fully confirmed: in connexion with this, the decrease of oscillation from the north-west towards the south-east is also strikingly developed, as on former occasions. The author, in alluding to the area over which these observations extend, remarked that the British Isles present a far too limited area for the purposes of examining thoroughly these atmospheric movements; he observed that in the more extensive examination which the movements of November, 1842, are now undergoing, there are four stations at which the barometric changes are of an opposite character during the first eight days of November, namely, Christiania and St. Petersburg in the north, and Paris and Geneva in the south. The curves at St. Petersburg and Geneva present the most decided opposition; rising at the one while falling at the other. The turning point in each case occurred on the 5th. These opposite movements he conceived to be occasioned by the opposite slopes of two waves passing from the south-west, and that the half breadth of each wave extended at least from Geneva to St. Petersburg. Such being the extensive character of the waves in question, in order to judge them in their totality it will be absolutely necessary to enlarge the area of observation. The centre of Europe is well dotted over with barometers, from which accurate results may be obtained; but even the British Isles, in connexion with that portion of Europe now under observation, form but a small part of the vast space over which the waves themselves extend. St. Petersburg is an important northern station, from which we have most excellent observations; but we require them also from Iceland, the northern parts of Norway, Sweden and Lapland, and also from Archangel in one direction, and from the southern parts of France, from Spain, Portugal and the northern parts of Africa in the other; also from the Mediterranean they would be highly important. Observations stretching from the most western point of Africa to the extreme north of Europe would go far to determine the longitudinal directions of the north-westerly systems of waves. In reporting the general progress of the inquiry, Mr. Birt stated that we are now in possession of materials for examining the great symmetrical wave, not only in particular years, as 1842, 1845, and 1846, but also over the central parts of Europe and the dominion of the Russian empire, as far as Sitka, on the north-west coast of America. He has combined observations extending from the west coasts of Ireland and the Orkneys on the one hand, to St. Petersburg and Geneva on the other; and he apprehends that the whole of the barometric movements over this area, which occurred during the first eight days of November, 1842, are fully explained by the transit of two large waves on two sets of parallel beds of oppositely directed winds—one from the south-west, the other from the north-west. The continuation of the investigation will be submitted at future meetings of the Association. In connexion with this, the author observed that a most important point appeared to be developing itself by means of these observations. Those from the north-west appeared strongly to indicate that somewhere in that direction the origin of the great barometric disturbances (a centre of oscillation) giving rise to the waves that pass onwards towards the south-east is to be sought. We have already obtained the nodal point of the two great systems of European barometric undulations—namely, Brussels. Between the Orkneys, which appear to be the nearest station to the north-west centre of oscillation, and Brussels the greatest decrease of oscillation occurs. This line of the greatest diminution

\* For former reports on this subject see *Athenæum*, No. 923, p. 673, No. 932, p. 680, No. 967, p. 993.



tion of oscillation appears to be well determined. The author closed his report with an allusion to the American system of atmospheric waves, especially those that accompanied the great Cuba hurricane of October, 1844, which has formed the subject of an elaborate investigation by Mr. W. C. Redfield, of New York; and was of opinion that the revolving storm, so ably brought to light by Mr. Redfield's labours, was produced by the crossing of two large long waves moving in different directions, as suggested by Sir John Herschel in his 'Report on Meteorological Reductions,' presented to the Association in 1843.

'On the Magnetic and Meteorologic Observatory at Bombay,' by A. B. ORLEBAR, M.A.—The comparatively small price of intellectual labour has enabled the Indian observatories to accomplish more work than any other. Thus, in nine months of 1845, there had been produced the materials of an unusually thick volume of observations, which was laid before the Section. Arrangements had been made so that the Bombay observations of each year should be in the hands of the printer at the close of that year, and be ready for issue at the end of the next. At the end of each volume, it is intended to append whatever reductions the superintendent may have been able to accomplish without impeding the issue of the observations themselves. The volume before the Section contained reductions of the declination and horizontal force for 1845 only. The peculiar method by which those reductions had been effected was briefly explained. In seeking to estimate the accuracy of the observations, it appeared that the accuracy of the term day observations is much greater than that of ordinary days, when each instrument was read only once an hour. In the case of the horizontal force, the accuracy of the former is nearly one hundred times greater than the latter. These discrepancies were attributed solely to the greater concentration of the observer's mind in observing. On this account, and in order to detect any smaller changes which may occur in different months, in the plan instituted for 1847 the hourly observations have been sacrificed to term observations three times a week. In this arrangement, however, the bi-hourly observations have been preserved, according to the desire of the Association.\* The practical difficulties which had impeded the working of the balance magnetometer had been surmounted; and it had been found advisable to suspend all dependence upon the induction inclinometer, which is exposed to strong theoretic objections, which (if just), render the instrument useless. The result from the balance magnetometer is, that the character of the vertical force is the same throughout the year, and is very similar to that of the horizontal force, excepting that it changes little during the night. The assistants had noticed that, in bringing the lights to illuminate the crosses of the balance magnetometer at night, the needle had been set in vibration. As it was proved by experiment that the unlighted lamps were quite free from magnetism, there seemed no possibility of attributing this to anything but light. The accidental construction of the observatory permitted this to be tested. The sun's rays were thrown on the needle, both directly and by reflexion, on the whole line of the needle, on the north end, and on the south end, whilst the needle was undisturbed in its case. The result was always the same; the magnet always indicated increase of strength, which diminished to its original condition so soon as ever the light was withdrawn. This uniformity of result in all cases is quite incompatible with any supposition that the disturbance of the magnet was caused by currents. In order to complete the theory of the vertical force, it was necessary to obtain the coefficient of reduction. The method of Dr. Lloyd was exposed at Bombay to peculiar objections, particularly on account of the little dependence that could be placed on the determination of the dip, which could not be safe within half a degree, but which enters as an important quantity into Dr. Lloyd's formula. A static method was therefore used. The latter had the advantage of allowing frequent repetition; and, therefore, although not superior to Dr. Lloyd's in other respects, permitted much greater accuracy to be obtained in the determination of the coefficient. This method was

invented only at the close of last year; but since that time a daily determination of the coefficient has been made. The effect of temperature upon all the magnets used in the observatory under ordinary atmospheric changes had been proved to be insensible. It had further been shown that the diminution of magnetism by increase of temperature was not due to the quantity of heat imparted, but to the velocity with which it was imparted. After the heat is withdrawn the diminution still continues; and after a time the magnetism gradually returns into the magnet as before the application of heat. These discoveries explained why the correction for temperature under ordinary circumstances had proved to be nothing. The declination at Bombay is only about 11° E. The scale of the declinometer is therefore read by a transit instrument; and the readings had never gone out of the field of the telescope even in the largest disturbances. Thus each observation became an absolute determination. The declination was generally moving eastward throughout 1845. The horizontal force, which had been determined every day nearly, by the Gaussian method, was diminishing. The horizontal force magnetometer gave the same result. The two, however, did not agree in details, and the Gaussian method seemed least satisfactory. The Gaussian calculations, however, proved that the magnetisms of all the needles were gradually diminishing; and other experiments seemed to show that all magnets give out magnetism, some quickly and some slowly. Time did not allow more than a reference to some of the more important steps which had been taken in meteorological inquiry. The actinometer had engaged much attention. But the observations of 1841, 1842, 1845, 1846, which had been taken to determine the daily curve, were not found to supply, even in the favourable atmosphere of Bombay, a sufficient number of observations in perfectly clear sky, to allow any certain determination. The curve, however, appears to be an hyperbolic arc, symmetrical on each side of an axis which represents the noonday heat; the ordinates parallel to the axis of the hyperbola representing the heat and the abscissæ along a line parallel to the tangent of the vertex of the hyperbola representing the time. The reduction of the temperature, in order to determine its laws, had been commenced on the following principles:—The changes of heat during the day originate in two causes,—the earth is continually receiving heat from the sun, and is continually cooling by radiation. Supposing these two causes only to be in operation, and the commonly received laws of solar and terrestrial radiation to be assumed, a differential equation between the hour of the day and the amount of heat in the air at the surface may be formed and integrated without difficulty. Thus it may be ascertained what should be the effect of a uniform sun heating a clear calm atmosphere. This will give a curve owing to the chief causes, as the elliptic curve of the Earth's motion round the Sun is owing to the law of gravity towards the Sun. And as the Earth's ellipse is perturbed by other causes, so this curve will be perturbed by the inequality of the Sun's heat, by the presence of clouds and vapour, and by winds. The value of these perturbing causes may then be easily ascertained. But since solar radiation is very imperfectly understood, it was found better to ascertain the laws of the night in the first instance. From sunset to sunrise the Earth is continually cooling by radiation; and on a calm cloudless night ought to cool exactly according to the Newtonian law. And if a single co-efficient can be ascertained, which co-efficient will depend upon the radiating power of the fields, trees, houses, &c. around, the heat of sunset being given, the form of the curve can always be ascertained for any clear calm night. Conversely from the observations on such clear calm times the coefficient of radiation can be determined. Thus, the curve of a clear calm time being determined, the value of the perturbations from winds and weather may be ascertained from the observations. The law of perturbations thus determined, they may be deducted from the actual curve of the day. Thus the day curve owing only to solar and terrestrial radiation may be formed, and thus the law of solar radiation deduced. To apply this it was necessary in the first place to analyze the winds. Time did not permit any explanation of this analysis; but one new fact with regard to the wind much assisted this investigation, and deserves attention.

By comparing a great number of ship logs, Commander Young, I.N. has formed charts of the winds in the Indian Seas. From these it appears that the S.E. trade being drawn above the equator in the month of May, in conformity with Dove's laws, becomes a S.W. wind; and, following the bend of the African and Arabian coasts, becomes the S.W. monsoon. This stream crosses the equator between the African coast and 60° of long. It meets the peninsula of India at Bombay after flowing in a S.W. course nearly in a straight line, to the north of which it curves upwards, and to the south of which it curves southwardly. Thus it is brought to circulate round the Maldivé Islands, to the south of which it again becomes a S.E. trade. In order to ascertain something with regard to the uniformity of the Sun as a heating body, the solar spots have been carefully examined and their places on the Sun's surface calculated. This has led to a classification of the spots into four genera, assuming the distinctions and principles of Sir W. Herschel. The first contains those spots which are formed by strong eruptions when the luminous supply is abundant; the second, by weak eruptions under the same conditions of the Sun's atmosphere; the third, by strong eruptions when the supply is weak; the fourth by weak eruptions under the same luminous state. The last two are the most common. Consequently, the greater the number of spots the weaker is the luminosity of the Sun. And, therefore, the calculations and statements which have shown that a greater number of spots occur in the cooler years is not contrary to Sir W. Herschel's theory, as it has been supposed; but in exact conformity with it. Thus, some estimate of this important element may be formed by a study of the solar spots.

'On Electric Clocks,' by Mr. BAIN.

'On Anemometers and Resolving Scales,' by Capt. COCKBURN.—The advantage of a correct statement of the winds at sea has, for some years, been most apparent to me. Since the introduction into the naval service of a certain formula for stating the force of the wind, represented by numbers from 1 to 12, according to the sail carried and speed of a well-conditioned man-of-war, and this depending upon the opinion of the officer of the watch, the notations are as various as the opinions on such a subject must be; and I certainly have seen great discrepancies noted on the ship's log-book. This evident evil is the immediate cause of my attempting to make an anemometer which might correct it. The concave form of the revolving wings of this instrument was taken from a paper read on the subject last meeting. The concave surface holding one-third more wind than the convex, by theory it would revolve one-third as fast as the wind; consequently, three times the distance described by a cup in a revolution would be the velocity of the wind in the time occupied; this is supposing the form of the cup to be a perfect hemisphere, and no friction either in the mechanism of the instrument or in the air; but as there must be friction and resistance from both these causes, this necessarily involves a correction, which must be determined by experiment, in order to establish the value of the revolutions. From the experiments I have made on the top of railway carriages and in steam boats, the correction for the large-sized cups is  $\frac{1}{5}$  or  $\frac{1}{4}$ . I do not by any means consider this to be decisive; the results have been various, from the steadiness of the wind during the trials, and from the mass of air carried along by the moving body: this will make the multiple 3.5 instead of 3. I am persuaded, also, that a different multiple will be required at moderate and at great velocities; but I have not been able to ascertain it. This value depends also upon the circumference of the circle described by the cups, their form, and weight. I shall not enter into the relative advantages of the forms and sizes of those I have had made: the diameters of each are, from centre to centre of the cups, including the arms, 12, 10, and 8 inches. Those simple multiplying wheels I have used may be substituted by the plan adopted for gas-meters, which I think preferable.

'Meteorological Observations, at Christiania, in the year 1846—in continuation of others presented to the British Association at York, Cambridge, and Southampton,' by J. R. CROWE, Esq.—They consist of observations of the barometer, made on every day of the year, at the hours of 7 A.M., 9 A.M., 2 P.M., 4 P.M., and 10 P.M.; observations of the thermometer made

\* The observations for 1846, checked by those of preceding years, have also supplied the third diurnal change, the vertical force.

on the same day and at the same hours; tables of the means of the barometer and of the thermometer from the 1st to the 10th of each month, and from the 11th to the 20th, and from the 20th to the 28th, or 30th or 31st, at the same five hours of each day;—and a calculation of the middle temperature of each month, the quantity of rain fallen in cubic inches; the direction of the winds at the same hours of each day for every month in the year. The meteorological tables from Alten, as in former years, have not arrived in England. They will be forwarded in the course of the summer by Mr. S. H. Thomas, of Alten: according to whose statement the mean height of the barometer increases from the equator to  $36^{\circ} 13'$ —where the maximum is found. From this point it decreases to  $68^{\circ} 24'$ —where the minimum occurs; and afterwards increases towards the Poles. This result agrees very nearly with the mean corrected observations made at Alten for the last nine years.

At the conclusion, the President exhibited, as on a kindred subject, a Chart by Capt. Shortrede, showing the relations which he traced between the temperatures of the dry and moist bulb thermometers and the dew point. The Chart consists of horizontal lines, curves, and lines drawn diagonally. The temperature of the air is counted on the horizontal lines, and the depression of the moist bulb on the curves; the intersection of these gives a point which, referred to the diagonals, gives the temperature of the dew point. For barometric pressures different from 30 inches, a correction is required, which is made on the temperature of the air, and consequently also on the depression, for which there is a simple rule. Then, with the temperature and depression so corrected, the Chart gives, by inspection, the temperature of the dew point. The Chart is protracted from tabulated quantities deduced from a strict analysis, after the method of Apjohn, using for the elasticity of vapour the tables deduced from the formula exhibited to the Section last year at Southampton.

'On a New Theory of the Polarization of Light,' by Prof. CHALLIS.—In this theory *ether* is regarded as a continuous fluid substance, and is treated mathematically on hydrodynamical principles. By means of a new general equation in hydrodynamics, which the author has discovered, he shows that a filament of the fluid may continue in agitation without lateral spreading, and that motion may be propagated along it uniformly, provided the motion consist of vibrations partly longitudinal and partly transversal, following the law of sines. Such a filament in motion is supposed to correspond to a ray of light. The sensation of light is due to the transverse vibrations. In a ray of common light the transverse motion is in planes passing through the axis of the ray, and is alike in all directions from the axis; in a plane-polarized ray the transverse motion is in planes not passing through the axis; and in an elliptically polarized ray the transverse vibrations are elliptical. Prof. Challis has extended his theory to the phenomena of double refraction, by a method which involves a new theory of the dispersion of light. He finds the surface of elasticity to be that of an ellipsoid; which is not in accordance with Fresnel's theory of double refraction. The equation of the wave-surface is, however, the same as in Fresnel's theory.

'On Anomalies in the Dispersion of Light,' by Prof. POWELL.

'On an Optical Experiment proposed at the last Meeting of the Association,' by Mr. DALE.

'On Changes in the Position of the Transit Instrument occasioned by the Temperature of the Earth, from the Observations of Prof. C. P. Smyth, of Edinburgh,' by Prof. POWELL.—Mr. Mallet, in an address to the Geological Society of Dublin, ('Journal,' No. 2, p. 184,) mentioned that Sir W. R. Hamilton had noticed certain changes of level in the transit instruments at his observatories; and that Dr. Robinson had also found such a change both in the general level of the observatory and also a motion in azimuth, recurring at annual periods, and apparently dependent on the temperature of the earth;—but no details of such observations were given. Prof. C. P. Smyth has pursued such observations in detail at the observatory on the Calton Hill, Edinburgh, aided by the thermometric determinations of the changes of the temperature in the subjacent soil, made under the direction of Prof. Forbes, by thermometers sunk in the ground. The data he used

were those obtained at depths of 5 feet, 3 feet, and in contact with the pier of the observatory. The movements, both in the level of the transit, and also in azimuth, are laid down graphically in curves, and exhibit a remarkable agreement with the changes in temperature, the western end of the level being highest in summer, and the deviation of the west end of the transit axis being greatest towards the south in winter.

'Singular Appearance of the Shadowed Part of the Moon on March 18, 1847,' by Mr. T. HANKIN.

#### SECTION B.—CHEMICAL SCIENCE, INCLUDING ITS APPLICATION TO AGRICULTURE AND THE ARTS.

'On the Quantity of Electrolysis as affected by the Extent of the Sectional Area of the Electrolyte,' by W. R. GROVE, Esq.—The experiments here described were made two years ago, and were intended as the commencement of a series of researches on the influence of quantity in voltaic arrangements, both as regarded the generating and also the conducting portions of the circuit. A single cell of a zinc and platinum diaphragm battery charged on the negative side with peroxide of manganese and hydrochloric acid has a more intense action and will decompose more water in a given time than a similar battery charged with nitric acid; but two or more cells of the former, arranged in series, are far inferior to a similar number of the latter, particularly if large electrodes be employed. This inferiority in the chlorine battery arises, I believe, from want of quantity in the electro-negative element; the chlorine is slowly liberated and much diluted by the liquid hydrochloric acid, while the nitric acid supplies an indefinite quantity of what we may term liquid oxygen. Thus the cathode is in the one case bathed by hydrochloric acid, and in contact with a comparatively small portion of chlorine, while in the other case it is covered to nearly its whole extent by oxygen; in other words, the sectional area of the efficient electrolyte is smaller in the first case than in the second. It is admitted that in metallic conductors the facility of conduction is directly as the sectional area of the conducting substance; but the problem is rendered more complex in electrolytes by the polarization or reaction occasioned by the liberated ions, and also by the quantity of the efficient chemical ingredients contained in the electrolyte, whether they act directly as ions or secondarily by absorbing or preventing the liberation of the cathions at the cathode. Dr. Faraday, in his 'Researches,' has shown that separate pairs of electrodes interposed in the same circuit, yield the same amount of gas whatever be their size; and this result has been misinterpreted by many, and regarded as establishing that the size of electrodes with regard to that of the battery plates makes no practical difference in the amount of gas liberated. From the great practical experience which the application of voltaic electricity to the electrotype and its kindred arts has promoted, this error has now for some years been removed. I believe I was the first to point out the necessity of electrodes equal in area to the battery plates in order to yield the full amount of gas which a battery is capable of yielding; and at the Royal Institution in the year 1840 I showed a voltmeter constructed on this principle, which yielded mixed gas from a battery of four square feet surface, at the rate of 110 c. i. per minute. The voltmeter used in these experiments was one which M. Gassiot caused to be constructed upon a suggestion of mine, and which consisted of five pairs of plates, each exposing to the other eight square inches of surface. Any number of these plates could be thrown into action at a time, so that excluding the outward sides of the exterior electrodes, the sectional area of the electrolyte would be 8.8+8.8+16+8, and so on up to 72 square inches. The diminution of the sectional area of the electrolyte in the battery occasioned by the porous cells was ascertained by first charging a given battery with sulphate of copper without any porous cell, ascertaining the amount of decomposition per minute, and then placing in the battery the porous cells, which had been previously soaked in the same solution of copper,—again decomposing, and calculating from the difference the diminution of area. The following is the table of experiments made with that view,—and which will in great part explain itself:—

September 24th, 25th, 26th, 1845. Experiments on Relative Sizes of Electrodes.				
No. of Cells of N. A. Battery in series.	No. united in quantity.	Surface exposed of Battery each plate.	Surface exposed of Electrodes in sq. inches.	Quantity of Gas in c. i. per minute.
1	1 id.	8	8	A trace id.
2		8	72	67 32 8 1 28 09
2	4	32	72	303 64 56 48 40 32 24 16 8 1 35

Remarks.—Battery in these Experiments charged with Nitric Acid sp. gr. 1.39, Sulphuric Acid, 1.22, or 1.4 water.

Dr. FARADAY remarked on the importance of this investigation, and its application to the principles of electro-telegraphic communications, now that the discharging current was to be made through the earth.

'On the Decomposition of Water,' by Dr. ROBINSON.—The affinity which combines the elements of water is lessened by any increase of temperature above that of the atmosphere, up to  $202^{\circ}$ . If the intensity exerted in opposition to that of a battery by water during electrolysis be measured (as in my communication to the Section last year), and again when the voltmeter is heated, it is found to decrease. In the first instance, its measure referred to my particular standard, as deduced from a mean of 12 sets is  $598.9$ , temperature  $61^{\circ} 2'$ . The next by a mean of 13 gives

$$e = 567.5 \dots t = 135^{\circ} 4'$$

and the third mean of 12

$$e = 531.0 \dots t = 201^{\circ} 2'$$

Applying to these the theory of probable errors, we successfully used in other branches of science, I find it is more than 10,000 to 1 that the difference thus shown is not all error of observation, and an even bet that it is not 5 wrong. The expression of  $e$  is, affinity of platinum for oxygen, minus twice that of hydrogen, or

$$e = o. p - 2 o. h$$

and from this I compute that  $o. h$  changes  $232$  for  $100^{\circ}$ .

This process is confirmed by a different process. The formula for the intensity of zinc and copper excited by dilute sulphuric acid is

$$E = o. z - o. cu - o. h$$

In Daniell's cell you substitute  $o. cu$  for  $o. h$ , and have

$$E' = o. z. - 2 o. cu.$$

In the latter instance,  $E'$  undergoes no change by heating the cell to  $163^{\circ}$ . The metallic affinities therefore do not vary within that range. But in the former  $E$  increases by heat; caused by the diminution of  $o. h$ , and it gives the change =  $27.9$  for  $100^{\circ}$ ; the mean of all being  $25.1$ . It is curious that if this rate were uniform, the temperature of decomposition by heat would be  $2386^{\circ}$ . In these experiments the conducting power of the electrolyte is greatly increased by heat. The only objection which I see against this conclusion is, that perhaps these effects may be due to the action of heat in facilitating the escape of gases. An experiment which I made seems to oppose this. If the apparatus be placed under the air-pump, the removal of pressure should show a similar change. This is not the case; when it is reduced to 1 inch of mercury, the measure of  $e$  remains unchanged. I think this a very curious result; it is quite the reverse of what I expected, for I had supposed heat would exalt these affinities up to a certain point, and afterwards that its action would change character. But its influence seems here always an antagonist to affinity. How then does heat ever produce the combination? The remark of Davy that hydrogen cannot be made to burn except by contact with a solid heated so as to be luminous, makes me conjecture that light is the



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agent which produces the molecular change of the three volumes of mixed gases into two of steam.

Dr. FARADAY exhibited some Diamonds, which he had received from M. Dumas, which had, by the action of intense heat, been converted into coke. In one case, the heat of the flame of oxide of carbon and oxygen had been used—in another the oxy-hydrogen flame—and in the third the galvanic arc of flame from a Bunsen battery of 100 pairs. In the last case, the diamond was perfectly converted into a piece of coke,—and in the others the fusion and carbonaceous formation were evident. Specimens, in which the character of graphite was taken by the diamond, were also shown. The electrical characters of these diamonds were stated also to have been changed,—the diamond being an insulator, while coke is a conductor.

On a remarkable Action of Ozone, Chlorine, and Bromine upon some Salts of Manganese and Lead, by Prof. SCHÖNBEIN.—Prof. Schönbein details some experiments, which went to prove the oxidizing powers of ozone on salts of manganese and lead. Upon adding ozonized air to solutions of the sulphate or chloride of manganese, and agitating the vessel, ozone disappears, and a hydrate of the peroxide of manganese is precipitated. This effect is not, however, produced by the action of either chlorine or of bromine in the dark; but by exposure to the light these elements act in a similar manner to ozone. Incidentally to these experiments, it was stated that strong nitric acid is rapidly decomposed by muriatic acid, even at a temperature below zero, into hyponitric acid, chlorine, and water; whilst chlorine and hyponitrous acid are transformed into nitric acid and muriatic acid.

MONDAY.

On the Precipitate caused in Spring and River Waters by Acetate of Lead, by Prof. CONNELL.—Nearly all well and river waters are known to yield a white precipitate with acetate of lead. This precipitate is rarely due to any chloride, as silver salts have too little action to countenance such an explanation; and its ready solubility in acetic acid shows that it is not caused by sulphates, unless in so far as it is not dissolved by that acid. The ordinary course I have ascertained to be the presence of carbonate of lime; but the remarkable fact is, that the reaction both of the acetate and of the acetic acid takes place even after the water has been boiled and filtered, so that carbonate of lime remains dissolved independently of the presence of carbonic acid. The waters referred to yield carbonate of lime when evaporated after having been boiled and filtered. To ascertain whence this carbonate of lime has proceeded, I passed a current of carbonic acid through lime water, till the precipitate at first formed was redissolved, and then boiled and filtered the liquid; but it did not affect lead salts to the same extent as common waters do. Neither did distilled water which had been left some days in contact with finely powdered marble. I incline to think that the origin of the dissolved carbonate of lime is double decomposition between an alkaline carbonate and a soluble lime salt; and have found, in all waters yielding the reaction, alkalies united to acids. The common water of the town of St. Andrews contains  $\frac{3}{100}$  of carbonate of lime after being boiled and filtered. It also contains a trace of carbonate of magnesia, which substance may occasionally be, in part, the cause of the reaction referred to, although to a far less extent.

Dr. PERCY exhibited a large and beautiful specimen of artificial Humboldtite or Mellilitic; which from its peculiar character, much resembling some of the crystals formed in volcanic products, excited considerable attention among chemists.

Dr. PERCY also exhibited a new potash apparatus for organic analysis, in which it was thought a larger surface was exposed to the action of the carbonic acid in passing through it.

On the Directions of Plants, by Prof. MACCAIRE.—The following are the points demanding most attention in this paper:—1st. That the theories advanced to explain the curling up of tendrils do not agree with the experiments made on those of the *Tamus communis*, and that it is the result of a vital irritability acted upon by chemical agents. 2nd. That the direction of the green parts of plants towards light is not the result of an attraction properly so called. 3rd.

That the bending outwards of slit stems is due to the elongation of the cellular tissue by endosmose of water and the resistance of the cuticle. 4th. That the quantity or rapidity of endosmose is not influenced by heat or by light. 5th. That light is the only agent of the natural position of leaves and of their turning over when inverted. The blue rays are the most, the red the least, active rays. 6th. That light does not act in this case by a physical attraction or repulsion properly so called. 7th. That the turning over of leaves takes place sometimes by a torsion of the footstalk; sometimes by a curling of the flat part of leaves. 8th. The blue ray appears to be the most, and the red the least, active in operating the turning over of leaves. 9th. That the exhalation of leaves is much increased when their inferior surface is exposed to light. 10th. That the decomposition of carbonic acid and the disengagement of oxygen gas are under the same circumstances considerably diminished.

On the Bearings of Photography on Chemical Philosophy, by Mr. MASKELYNE.—This was an attempt to generalize the numerous results which had been obtained in the practice of the art of photography, so as to establish a general theory of photographic action. The remarkable changes which take place in the various salts of silver when exposed to the sun's rays were referred to in detail; and the author was disposed to regard all these changes as instances of double affinity influenced and directed by the actinic force, to which, however, he gave a much wider significance than usual. The Undulatory Theory was examined in reference to these photographic changes, and a mechanical disturbance was supposed to be produced by a set of vibrations communicated to the prepared plate in the Daguerreotype process. No new experiments were adduced except one, which went to show that it was probable in all cases of photographic change, where silver salts were employed, the metal was left in its pure metallic state.

Mr. HUNT made a few remarks on this paper in correction of some statements which were not supported by the result of experiment.

Experiments on Crystallization under Extreme Pressure, by W. S. WARD.—This was merely a statement that a number of experiments had been made since the last meeting of the Association, with a view of determining if a speculation then thrown out was correct. Common salt, muriate of ammonia and other salts were exposed, in solution, to a pressure of 100 atmospheres; but no difference in their crystallizable powers were apparent. It was therefore proved, that under a pressure equal to that found in the depths of the Mediterranean no crystallization from pressure would take place.

Mr. WARD exhibited a new Galvanometer.—In this instrument, the current is measured by the deflexion of the conducting wire by a permanent magnet. The coil of wire being placed vertically over the poles of the magnet is free to move, and as the current is more or less powerful the coil requires a greater or less weight to bring it to its original position: hence the force of the current is expressed in grains instead of in degrees.

On the Preservation of Metals and Metallic Combinations from Oxidation, Decomposition and Injury from Marine Deposits and Incrustations, by Baron CHARLES WETTERSTEDT.—This communication detailed the advantages which have arisen from the use of the patented process of applying what appeared from the statement to be a sulphuret of copper, in the form of a varnish, to ships' bottoms. Numerous specimens were shown in proof of the protecting influence of this composition.

On the Coloured Glass employed in Glazing the new Palm House in the Royal Botanic Garden at Kew, by R. HUNT.—It has been found that plants growing in stove houses often suffer from the scorching influence of the solar rays, and great expense is frequently incurred in fixing blinds to cut off this destructive caloric influence. From the enormous size of the new Palm House at Kew it would be almost impracticable to adopt any system of shades which should be effective—this building being 363 feet in length, 100 feet wide and 63 feet high. It was therefore thought desirable to ascertain if it would be possible to cut off these scorching rays by the use of a tinted glass, which should not be objectionable in its appearance, and the question was at the recommendation of Sir Wm. Hooker and Dr. Lindley

submitted by the Commissioners of Woods, &c. to Mr. Hunt. The object was, to select a glass which should not permit those heat rays which are the most active in scorching the leaves of plants to permeate it. By a series of experiments made with the coloured juices of the palms themselves it was ascertained that the rays which destroyed their colour, belonged to a class situated at that end of the prismatic spectrum which exhibited the utmost caloric power, and just beyond the limits of the visible red ray. A great number of specimens of glass variously manufactured were submitted to examination and it was at length ascertained that glass tinted green appeared likely to effect the object desired most readily. Some of the green glasses which were examined obstructed nearly all the heat rays—but this was not desired—and from their dark colour these were objectionable, as stopping the passage of a considerable quantity of light, which was essential to the healthful growth of the plants. Many specimens were manufactured purposely for the experiments by Messrs. Chance of Birmingham, according to given directions, and it is mainly due to the interest taken by these gentlemen that the desideratum has been arrived at. Every sample of glass was submitted to three distinct sets of experiments.—1st. To ascertain, by measuring off the coloured rays of the spectrum, its transparency to luminous influence. 2nd. To ascertain the amount of obstruction offered to the passage of the chemical rays.—3rd. To measure the amount of heat radiation which permeated each specimen. The chemical changes were tried upon chloride of silver, and on papers stained with the green colouring matter of the leaves of the palms themselves. The caloric influence was ascertained by a method employed by Sir John Herschel in his experiments on solar radiation. Tissue paper stretched on a frame was smoked on one side by holding it over a smoky flame, and then while the spectrum was thrown upon it the other surface was washed with strong sulphuric ether. By the evaporation of the ether the points of caloric action were most easily obtained, as these dried off in well defined circles long before the other parts presented any appearance of dryness. By these means it was not difficult, with care, to ascertain exactly the conditions of the glass, as to its transparency to light, heat, and chemical agency (actinism). The glass thus chosen is of a very pale yellow-green colour, the colour being given by oxide of copper, and is so transparent that scarcely any light is intercepted. In examining the spectral rays through it, it is found that the yellow is slightly diminished in intensity, and that the extent of the red ray is affected in a small degree, the lower edge of the ordinary red ray being cut off by it. It does not appear to act in any way upon the chemical principle, as spectral impressions obtained upon chloride of silver are the same in extent and character as those procured by the action of the rays which have passed ordinary white glass. This glass has, however, a very remarkable action upon the non-luminous heat-rays, the least refrangible caloric rays. It prevents the permeation of all that class of heat-rays which exists below and in the point fixed by Sir William Herschel, Sir H. Englefield, and Sir J. Herschel, as the point of maximum caloric action. As it is to this class of rays that the scorching influence is due, there is every reason to conclude that the use of this glass will be effective in protecting the plants, and, at the same time, as it is unobjectionable in point of colour, and transparent to that principle which is necessary for the development of those parts of the plant which depend upon external chemical excitation, it is only partially so to the heat-rays, and it is opaque to those only which are the most injurious. The absence of the oxide of manganese, commonly employed in all sheet glass, is insisted on, it having been found that glass, into the composition of which manganese enters, will, after exposure for some time to intense sun-light, assume a pinky hue, and any tint of this character would completely destroy the peculiar properties for which this glass is chosen. Melloni, in his investigations on radiant heat, discovered that a peculiar green glass, manufactured in Italy, obstructed nearly all the caloric rays; we may, therefore, conclude that the glass chosen is of a similar character to that employed by the Italian philosopher. The tint of colour is not very different from that

of the old crown glass; and many practical men state that they find their plants flourish much better under this kind of glass than under the whitesheet glass, which is now so commonly employed.

'On the Application of Photography to copying Microscopic Objects,' by Dr. CARPENTER.—Numerous specimens of Daguerreotype and other photographic copies of very delicate microscopic objects were exhibited. These were peculiarly beautiful, and were obtained by the use of the solar microscope, the object being thrown upon the paper or plate instead of upon the ordinary screen. The minute fidelity of these copies was far beyond anything which could be obtained by the artist; and the ease with which they were produced, particularly on photographic paper, recommended this application of the art to the attention of naturalists.

Mr. Fox TALBOT, after showing some Calotypes coloured by Mr. Calvert Jones on the positive impressions, begged to call attention to a case of scientific piracy. Mons. B. Everard exhibited before the Academy of Sciences, in Paris, a series of beautiful photographs, and deposited a sealed packet containing a description of the process by which they were obtained. These drawings were so much admired that it was desired that the process should be known; and, with the permission of M. Everard, the packet was opened, he having made it a condition that the papers it contained should be printed. This was done, and a detailed account of the process of M. Everard appears in the *Comptes Rendus*. This process is, in every minute detail, the same as the Calotype process of Mr. Fox Talbot, which has been so long before the world. As the act of an individual, Mr. Talbot would not have troubled the Section with it; but as it has received the stamp of authority by being printed by the Institute, he deems it important that the public attention should be called to so glaring an act of piracy.

'On the Products of the Decomposition of Chrysamic Acid,' by Dr. SCHUNK.—This was a purely chemical paper, showing the peculiar forms of chrysamic acid when decomposed. The investigation is intimately connected with Dr. Schunk's researches on colouring matters, and will come before the scientific public in connexion with that inquiry. Several interesting specimens of colouring matters were exhibited.

'On Biliary Concretions,' by Dr. DE VRIJ.—This was an examination by Dr. De Vrij, made with a view of ascertaining, particularly, if the presence of copper could be detected in these concretions. It would appear, from the Doctor's researches, that its presence is purely accidental, and by no means constant.

## TUESDAY.

'On a peculiar Formation of Permanganic Acids,' by Prof. SCHÖNBEIN.

Sir ROBERT SCHOMBURGK exhibited some Sugar said to be produced from Diseased Potatoes.—Several chemists present thought some mistake must have been made; as they considered the sample before them as highly crystallized cane sugar, and distinctly different from the sugar of starch.—If such were not the case, it was evident that Sir Robert Schomburgk's correspondent had made a great discovery and one of the utmost value.—Sir R. Schomburgk said, that he could not hold himself in any way responsible for the specimen. It had been just sent to him professing to be sugar from potatoes.

'On the Potassium Battery,' by Mr. GOODMAN.—An amalgam of mercury and potassium was placed in a vessel closed with a diaphragm at one end, and holding mineral naphtha. This was plunged into an acid solution, or a solution of sulphate of copper, containing a platinum plate. By the action of the acid through the skin the oxidation of the potassium was effected; and by connecting these plates with a voltmeter, water was readily decomposed, or with a galvanometer a considerable deflexion produced.

'On the Analyses of the Inorganic Constituents of Organic Bodies,' by Dr. DE VRIJ.—Dr. De Vrij wished to call especial attention to the necessity of observing minutely the precaution recently insisted upon by Prof. H. Rose in respect to the determination of the inorganic constituents of organic matter—as of the blood, for example.—Dr. De Vrij having made comparative experiments for determining the quantity of inorganic matter in blood by the usual

mode of incineration, and by that of Rose, which consists in treating the residue after careful carbonization, with dilute hydrochloric acid, obtained one-fourth more inorganic matter by the latter than by the former process. This difference is very considerable, and ought especially to excite the attention of chemists engaged in the quantitative determination and analysis of the ashes of plants.

'On the Specific Gravity of Sulphuric Acid at different degrees of dilution, and the relation which exists between the development of heat and the co-incident contraction of volume in Sulphuric Acid when mixed with Water,' by Prof. LANGBERG.—This communication, consisting of the application of Mathematics to the science of Chemistry, and embracing an immense amount of calculation, cannot be printed in abstract.—The Committee of the Section recommended that Prof. Langberg's paper should be printed entire in the Reports of the Association.

'On an Amorphous Boracite,' by Dr. M. KARSTEN.—When boring for rock salt at Neusalzwerk, in the neighbourhood of Minden in Prussia, at the depth of about 1,400 feet; a bed of amorphous boracite was found, of which specimens were brought out by the boring apparatus. The chemical analysis, which proves that the composition of the amorphous mineral is exactly the same as that of the well-known crystallized body, was made by Dr. Karsten in Berlin, particulars of which may be seen in the monthly reports of the Berlin Academy. It seemed to him interesting to examine if that uncrystallized species would show the pyroelectric quality which in so high degree is to be seen in boracite crystals. Sir D. Brewster has pointed out a way by which the pyroelectric quality of pulverized tourmaline may be shown. By heating that substance the fine particles cohere together, and show that a polarization has taken place in them. The same phenomenon is to be seen in the particles of the amorphous boracite by pulverizing and heating it on a metallic plate. These boracite particles show by their pyroelectric properties that they must be crystallized, although by microscopic examination the crystallization cannot be discovered. The conclusion must be, that the difference between the crystallized and the amorphous states cannot be exactly determined, since the microscope shows in this case no crystallization where the pyroelectricity is a proof that we must suppose a crystalline structure.

'On some Phenomena of Photography,' by C. BROOKE.—In the application of photography to the purposes of registration, Mr. Brooke had found that an impression made on paper prepared with the bromide of potassium and nitrate of silver gradually passed away, so that at the end of ten or twelve hours very little evidence of actinic action could be detected. In preparing highly sensitive papers Mr. Brooke had found that the addition of a very small quantity of iodide of potassium to the solution of bromide of potassium very materially improved the sensibility of the preparation.—Mr. HUNT mentioned several cases in which chemical compounds which had undergone actinic change restored themselves to their original condition when placed aside in the dark.

'On a New Principle causing Crystallization,' by H. Fox TALBOT.—If ordinary crystallization be observed under a microscope, it will be found that a deposition of matter gradually takes place on all sides of the crystal. In addition to this accretion of particles under the force of crystallization, Mr. Fox Talbot considers that in some cases tension may be an incipient cause of crystallization. Several experiments of Sir D. Brewster, published some years since, showing that natural tension might be the cause of double refraction, were brought forward in support of this view. The following is the experiment upon which Mr. Fox Talbot rests his theory: a piece of nitrate of potash, no larger than a pin's head, is fused upon a piece of glass, and observed under the microscope with a polarizing apparatus, it then appears as one crystal exhibiting the most beautiful and brilliant colours. This does not take place when glass or rock crystal are thus fused. It appeared, therefore, that this crystallization was not an accumulation of particles around a nucleus, but a species of crystallization depending entirely on internal tension.—Sir D. BREWSTER was disposed to adopt this view of Mr. Talbot's.—Dr. LEESON, on the contrary,

thought there was no difference between the case adduced and ordinary crystallization.

'On the relative Nutritive Value of different kinds of Food,' by Dr. DAUBENT.—Tables showing the amount of nutritive matter in various articles in common use as food, and their commercial values, were shown; but Dr. Daubent was unable, owing to severe indisposition, to bring the matter more fully before the Section.—A short conversation arose on the question whether the nutritive property of a given kind of food was to be estimated from its nitrogenous constituents alone—or whether the salts, particularly the phosphates, should not be received into the calculation:—in which Prof. WAY and Dr. AYER took part.

'On two new Salts of Gold,' by the Rev. J. R. READE.—The iodide of ammonia was found to dissolve gold most readily; and a blackish blue salt, the ammonia-iodide of gold, was almost immediately obtained. By exposing this to a gentle heat its character was changed and another salt formed. These salts, the nature of which had not been determined, were beautiful objects under the microscope.

## SECTION C.—GEOLOGY AND PHYSICAL GEOGRAPHY.

[This paper, by some mistake at the moment of making up, was omitted from our report of the business done at last Friday's meeting.]

'On the *Cystidea* found in British Rocks, and on recent additions to our knowledge of the fossil *Echinodermata*,' by Prof. E. FORBES.—In 1843, when Mr. Morris published his Catalogue of British Fossils, the number of known *Asteriadae* was only four, of *Ophiurida* five, and of the *Cystidea*, only one doubtful form. Prof. E. Forbes is now acquainted with thirty species of British fossil *Asteriadae*, mostly made known through the researches of Mr. Dixon; with eleven *Ophiurida*, seventeen undoubted *Cystideans*, and an example of the *Euryalida*, discovered by Prof. Sedgwick, and the only fossil representative of an important existing tribe. The most curious of these new fossils are the *Cystidea*, a tribe of radiate animals, on which important light has been thrown by the researches of Baron von Buch; of these creatures four belonging to the genus *Spheronites*, three to *Caryocystites*, one allied to *Cryptocrinites*, and three species of *Hemicosmites*, are from lower Silurian rocks. Besides these, there are three species of *Syconites* (or *Echinoecrinites*) and three *Pseudocrinites* from the upper Silurian rocks of Dudley. With the exception of four species, all these *Cystideans* are new forms and unknown on the Continent. Prof. Forbes then stated his view of the relations of the *Cystidea*, which he regards rather as above the *Crinoidea* in the zoological series than below them; they combine with the *Pentamerites* to form a great and rapidly metamorphosing group, diverging within itself, and conducting from the *Crinoidea* to the *Echinoda* and *Asteriadae*, by a metamorphosis at first apparently retrograde, and repeating the rudimentary forms of the *Crinoidea* themselves. According to this view of their zoological relations, they are not to be regarded as a first sketching out of the crinoidal group in the earliest strata, those in which they most abound, but simply as modifications of echinodermal forms adapted to peculiarities in the physical condition of the bed of the sea. Of the new *Asteriadae*, those found in the palaeozoic strata bear closest affinity to the existing *Urasteres* of cold and temperate climates; so also does the *Protaster*, the fossil form of *Euryale*. The oolitic and cretaceous starfishes bear a closer resemblance to species from warmer climates, the cretaceous formation containing the genera *Goniaster*, *Goniodiscus*, *Oreaster*, *Ophidaster*, and *Asteria* proper.

## MONDAY.

'On the Fossil Plants of the Carbonaceous Strata near Sydney, Australia,' by Prof. SEDGWICK.—The cliffs on the coast near Sydney exhibit a series of strata which have been compared with the Devonian rocks of England; they dip from the north, and from the south, towards Sydney, where, in the central and newest portion of the section, beds of coal and numerous fossil plants have been found; the carbonaceous beds are not separated from those below by want of conformity or any great change of mineral character. A large series of the fossil plants has been transmitted to the Cambridge Museum, by the Rev.

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W. B. Clarke, and these have been examined by Mr. McCoy, and the results reviewed by Dr. Hooker. It appears, that out of fifteen species, ten are new, and five have been already described; with the exception of one species, all are peculiar to Australia, this one is the *Glossopteris Browniana*, of the Indian coal-fields. Of the genera, some are common to the European oolites and coal formations (*Pecopteris*, &c.); but none of the genera peculiar to the coal (such as *Stigmaria*) have been found. One most remarkable genus, *Vertebraria*, is common to the Australian and Indian strata. The whole group, and especially the genera *Gleichenites* and *Phyllothea*, are more nearly related to the existing Flora of New Holland than the plants of any other portion of the world.

On Count Keyserling's Geology of the North-Eastern Extremity of Russia in Europe, by Sir R. I. Murchison.—Sir R. I. Murchison exhibited the new work, entitled 'Wissenschaftliche Beobachtungen auf einer Reise in das Petschora-land,' and explained its value in completing the acquaintance of geologists with the great north-eastern angle of Russia in Europe, which is watered by the river Petchora. The geographical and astronomical observations in this expedition (to a region previously known only imperfectly to the Russians through the traders in fur) are by M. P. von Krusenstern of the Imperial Navy. The geological outline of the present work (executed in 1843) was communicated to Sir R. I. Murchison previous to the publication of the volumes on the 'Geology of Russia and the Ural Mountains,' and constitutes one of the chapters of that work; but the object of this communication was to call attention to the additions which had appeared: first, in regard to the physical and geological delineation of this wild country in two maps; and, secondly, to the numerous plates (23 in number) of the organic remains of the Silurian, Devonian, Carboniferous, Permian, and Jurassic systems, occurring in a hitherto unexplored region which extends over near 11 degrees of latitude; viz. from 60° to 71° N. lat., and 25° long., including the north-easternmost range of the Ural Mountains. Sir R. I. Murchison stated that although the eastern flank of that chain had been touched upon at one or two points by the authors, and notably in N. lat. 65°, enough had only just been done by them in this respect to connect, in an approximate manner, the structure of the northern end of the chain with that previously described: all this rocky territory, extending 3° and 4° of latitude beyond the limits of arboreal vegetation, is now under the survey of a distinct expedition, commanded by Col. Hoffman, and sent out under the auspices of the Geographical Society of St. Petersburg. The chief geological interest attached to the work of Count Keyserling (in addition to the points alluded to) is the determination of an axis of palaeozoic rocks constituting the Timan Ridge, which, branching off from near the Ural Mountains in lat. N. 62°, trends in a N.N.W. direction on the left bank of the Petchora to the bay of Tchekskaya, and is prolonged into the promontory of Kamn-Nos in lat. 68° 45'. This ridge, divergent from the meridian direction of the Ural Mountains, but parallel to their northern extremity, seems to form a part of the great girdle of palaeozoic deposits which wrap round the crystalline nucleus of Lapland and Scandinavia, of which the Baron Leopold von Buch, by his description of the fossils collected there, has recently determined an important fragment of carboniferous age in Bear Island near Spitzbergen, on the north-western flank of Scandinavia.

Count Rosen exhibited maps of a part of Sweden, executed by the Crown Prince, which were described by Sir R. I. Murchison. The first of these maps represented by a scale of colours the physical features of the country; a dark-green tint being employed to designate all the parts elevated less than 100 feet above the sea, and various other colours for heights up to 3,000 feet. The second Map exhibited the extent of the wooded district, dark green being employed for the primitive forests, and a lighter shade for those where the large timber had been felled. The third Map exhibited the mining districts, dots of colour indicating the mines, whilst the routes by which the ore was conveyed to the blast-furnaces and manufactories, and to the ports (principally Stockholm and Göttenburg), were represented by lines of the same colour. The ore, being smelted by charcoal fires, has to be shipped to the forest dis-

trict and again brought back; whilst the abundance of streams has given rise to numerous hammer-works instead of the more powerful machine in which iron is rolled in this country. The iron of Sweden has often travelled 1,200 miles, at a cost of 20 per cent. on its value, before it is exported. Railroads and canals will shorten the distance and lessen the expenses, whilst the restrictions on the trade are at the same time being removed. Between Stockholm and Göttenburg there is an elevation exceeding 400 feet, and the railroad now in progress will reduce the journey from 4½ days, the present time by sea, to 16 hours. Count Rosen also exhibited several other maps, one of them (by Col. Löven) showing, by colours, the amount of population in different districts, varying from 500 to 15,000 per square mile, and pointed out the relation of these colours to the physical condition of the country.

Prof. NILSSON read a paper 'On the Elevation and Depression of the Surface of Scandinavia.'—The subsidence of the extreme southern part of Sweden in comparatively recent times is indicated by the occurrence of peat-bogs in Scania, from 14 to 20 feet below the level of the Baltic, yet containing human skeletons and weapons, associated with the bones of the *Aurochs* and other existing animals. Further north, instead of the land subsiding, it has long been rising higher from the sea; raised beaches, and terraces of gravel containing sea-shells and human skulls, of Celtic races, have been for some time well known.

Mr. PHILLIPS considered these evidences of the gradual elevation of one portion of Sweden, attended with the equally gradual subsidence of another, as amongst the most valuable aids to the interpretation of ancient phenomena; for although there was no evidence that our own coast was now undergoing similar changes, yet the cause was not extinct in nature, which had produced such changes here, in more ancient times.—Prof. SEDGWICK adverted to the well-known fact of the organic remains of marine animals being found in situations far removed from the sea, and at great elevations "even to the bristling crests of the Alps and Andes;" these facts were admitted in proof of the elevation of the land—not of the subsidence of the sea. The instructive phenomena still witnessed in Sweden were not, however, to be taken as a measure of the forces employed by nature in all parts of the world and in all time;—such gradual movements might continue for a long period producing a dome-shaped elevation of a portion of the earth's crust, but whenever the expansive force below overcame the tension of the upheaved strata, a succession of catastrophes might follow, totally unlike the slow changes which preceded; the broken strata might be contorted, or displaced hundreds of fathoms, and movements produced in the ocean itself, effecting greater changes on the coasts than a mill of years of gradual erosion.

Mr. EARLE exhibited a large bone of the Pliosaur, and other fossils from the Kimmeridge clay near Oxford, and THE DEAN OF WESTMINSTER a brick from Babylon, stamped with the maker's name, or perhaps the royal mark, and the footprint of a dog on one side, and on the other a coating of bitumen with the impression of the reeds used to stiffen the cement.

'On a System of Colouring Geological Maps,' by J. W. SALTER.—Hitherto geologists have represented the British strata by colours taken from the general hue of the rock, modified by the necessity of using bright tints and distinguishing adjacent formations by colours strongly contrasted. Continental geologists have not entirely adopted these colours, nor is there perfect accordance even in the maps of Englishmen. Mr. Salter proposed to remedy the inconvenience and uncertainty attending the present method of colouring maps by introducing a system capable of universal adoption. The same colour, he says, should always be employed for the same group of rocks, various shades of that common colour being sufficient to distinguish, and at the same time combine, all the subdivisions of that group. Again, the colours used to designate systems of strata should follow in some constant order. The chromatic scale naturally suggested itself as the most harmonious gradation of colours, and accordingly Mr. Salter proposed to represent the Silurian strata by Violet; Carboniferous, Blue; Triassic, Green; Oolitic, Yellow; Cretaceous,

Orange; Tertiary, Red. It was necessary to use a more intense red, with the addition of various markings, for the granitic rocks.

Mr. GREENOUGH referred to the pamphlet accompanying his geological Map of England, for an exposition of the principles by which he was guided,—which were approved of by the English geologists, and from which the French had departed with regret.—Mr. PHILLIPS and Sir H. DE LA BECHE recommended the adoption of one colour for each system, employing engraved lines of various kinds to distinguish the subdivisions, thereby diminishing the cost and increasing the accuracy of coloured maps.—Sir R. I. MURCHISON said he had once attempted to apply the scheme now advocated by Mr. Salter, but found it, practically, less serviceable than Mr. Greenough's, which was the basis of all the other maps.

'On the Cause of the Existing Physical Outline of the Surface of Parts of South Wales,' by Mr. A. C. RAMSAY.—Mr. Ramsay exhibited two geological sections in South Wales, constructed on the same vertical and horizontal scale. Part of one of these sections extended from Ait-wen, in Cardigan Bay, to Cefnbanc-hir, about fifteen miles distant; the other section was in a parallel direction, at the distance of about twenty miles. These sections exhibited Lower Silurian strata, variously contorted, and presenting frequent outcrops and repetitions of particular beds. In each section a straight-edge applied to the surface barely touched in succession all the highest points of the country, leaving many valleys of denudation below, but no isolated peaks rising above the general level, which formed an inclined plane of about 1 degree from the highest land down to the sea. In a former communication Mr. Ramsay had shown that an enormous mass of strata must have been removed from this district before the hills and valleys acquired their present outline, and he believed no operation in nature could have produced such extensive denudation but the action of breakers at the sea level. The tract included between the present sections had doubtless undergone several changes of level; and he proposes to explain its form, by supposing that, after its first elevation and fracture, it had gradually sunk beneath the sea, and, as it subsided, the breakers had planed away all the eminences and irregularities of surface, leaving a regular slightly inclined plane going outwards into the sea. Subsequently the tract was again subjected to oscillations of level, in the course of which the sea, acting unequally upon the curved and fractured strata, excavated the present valleys on the surface.

'On Cyatidea from the Wenlock Shale,' by Mr. J. BUCKMAN.—This was a notice of the discovery of the *Sycocystites*, referred to in Prof. Forbes's communication read on Friday. It was found in the lowest Wenlock shales, at Walsall, associated with *Leptæna imbræx*, *Spirifer reticulatus* and *S. lynx*, and a species of *Crania*.

'On the Occurrence of Marine Plants in Worcestershire,' by Mr. BUCKMAN.—Two sea-shore plants, *Glauz maritima* and *Arenaria marina*, were discovered by the author growing on the banks of the Droitwich Canal, which is connected with the salt works, and has a brackish taste along its whole line, from Droitwich to the Severn, three miles above Worcester; a pint of this water was recently examined, and yielded sixty-four grains of common salt. Mr. Buckman considers it improbable that the seeds of these plants should have travelled by water from the Bristol Channel, or by the small barges from Gloucester; and he suggests that these species, finding the circumstances favourable, have continued to grow here ever since the Severn Valley was an estuary of the sea; or that the seeds of the plants growing here when the sea retired, remained dormant in the soil, till springs or a canal of salt water restored the conditions necessary to their development. The river, now comparatively narrow, has evidently diminished its bounds continually for many ages; and on either side of the vale are raised banks or terraces of marine gravel and sand, sometimes containing shells of *Cardium* and *Cyprina*, *Littorina*, *Murex*, *Ostrea*, and many other genera. But besides these undoubted sea-beaches, and the two sea plants mentioned, numerous other plants not strictly marine, but such as are seldom found far from the sea, occur at various places on the banks of the Severn, and also serve as traditions of the sea. The most conspicuous of these





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to the conclusion that these stems do not increase by additions to the centre as is ordinarily thought, but from the structure of Sparganium and other plants he believed these stems were truly exogenous.

Dr. LANKESTER did not think it would be advisable to give up the terms Exogens and Endogens, although the distinction on which they were originally founded appeared to be erroneous. He was glad to find that Mr. Henfrey's researches confirmed the view of the formation of wood that he had maintained before the Association some years ago.

Mr. WESTWOOD made some remarks on the existence of the potato disease in Oxfordshire. Some potatoes of his own had been attacked this year, and in three different districts around Oxford he had observed its presence. As an entomologist he wished to deny most distinctly that he thought the disease arose from the attacks of an insect. It had been stated by Mr. Smece that it arose from the attacks of a new aphid which he called *Vastator*, but this aphid, far from being new, had been described many years ago and was a very common insect on decaying plants. Another gentleman proposed to call the insect *A. pestilens*. Mr. Westwood drew attention to the ignorance such observers displayed, as rendering it necessary that zoology should be taught as a branch of science. He was sorry to be speaking on this subject in an English University where neither zoology nor comparative anatomy were recognized as branches of education.

Mr. J. E. GRAY stated that he had compared some specimens of the *Aphis vastator* with species of aphides in the British Museum, and found that under this name Mr. Smece had included three or four well-known species.—Dr. LANKESTER drew attention to a bundle of potato-stalks which he had brought from Pangbourne which gave every sign of disease, but not an aphid could be found upon them. One fact of this kind was sufficient to prove that the disease had no dependence upon the insect. He had heard from a gentleman in Manchester that potatoes sown in new soil on Chat Moss were free from the disease, whilst those sown in old soil all had the disease. This looked as if the inorganic constituents of the soil or potato were the source of the disease.—Mr. BABINGTON referred to the potato stems from Pangbourne. He had examined the roots of these plants, and found that wherever the disease appeared in the leaves there was evidence of disease in the roots. He believed the root was first at fault. He quite agreed with Mr. Westwood in the necessity of a more general knowledge of natural history.—Sir W. JARDINE said, that chemical investigations of a very accurate nature both of the soil and the potato were being carried on in Edinburgh. He had found that potatoes grown on moss soil were more free from disease than others. This did not arise from the newness of the soil, for he had had some potatoes entirely spoiled which were planted in an orchard recently turned up. He had seen the stem and root very much affected without the leaves being diseased at all.—Mr. HOGAN called attention to a method he had pursued of preventing the disease in the potato by growing them from seed.—Mr. C. DARWIN had brought the seed of the potato from Peru, and the tubers grown from it were quite as much affected as any other.—Dr. KELAART stated that he had recently heard from Ceylon that the potatoes had been attacked in that island.—A MEMORANDUM said that he had just received letters from New Zealand, and the potato was also affected there.—The Rev. N. YOUNG, of New College, exhibited some potato-leaves affected by the aphid.

Mr. MURRAY communicated a paper 'On the Vitality of Potato-Seeds,' in which the seeds of the potato had remained fifteen years in the ground, and when the soil was turned up they vegetated and produced a crop.

A paper was read from Dr. ILIFF 'On some Experiments on the Roots of the *Canna Indica* with reference to their value in an economical point of view.'—The Dean of Winchester has succeeded in cultivating the *Canna Indica* in the open air; and upon this fact Dr. Iliff recommends its cultivation in this country for the purpose of procuring arrow-root.

Dr. LANKESTER stated that as the value of arrow-root starch was not greater as an article of diet than potato starch, and as its yield of starch did not

appear to be so great as that of the potato, it was clear there would be little national advantage from such a proceeding.

Prof. ALLMAN made some remarks on certain peculiarities he had observed in the stomates of *Ceratopteris thalictroides*. He also described at the same time a new genus of Freshwater Algae.

Mr. THWAITES communicated a paper 'On the Structure of Diatomaceæ,' in which he stated that he had observed a conjugation of the frustules precisely similar to that which had been observed in the Desmidiæ and some of the Oscillatoria.

Prof. E. FORBES remarked this fact was of the utmost importance to systematic natural history, as it at once settled the disputed position of these beings in the organized scale, and placed them among plants.

A paper was read from Miss TWining 'On the British Flora compared with other Countries.'

Capt. WIDDINGTON requested that persons travelling in the Italian Peninsula would notice the various forms of oak, and, if possible, procure acorns and send them to the Horticultural Society or to Kew Gardens.

## TUESDAY.

'On the Structure of Nautilus Pompilius,' by Prof. VAN DER HÖVEN, of Leyden.—My friend, De Vriese, lately gave me a specimen of *Nautilus pompilius*, which was in a bad state of preservation; but still of great interest to me, as I found occasion to observe a conformation of the head quite distinct from that which has been described by Owen and Valenciennes. As to the external tentacula, I found only this very unimportant modification—that there were but nineteen at each side, instead of twenty. Internal to this part, whose upper or dorsal part, called hood by Owen, fills entirely the opening of the shell, the integument forms a prolongation, rising up to another more internal circle. To the ventral or inferior side, this prolongation unites by a transverse part with the external tentacular ring. This part shows many transverse impressions parallel to the margin, and many irregular excavations, which gives to it a reticulated appearance. The prolongation is divided on each side into eight digitations of different size, including each a tentacle similar to that of the internal set, but of a more minute size. Those parts correspond to the superior labial processes of Owen ('Mém. on the Pearly Nautilus,' Tab. iv. g. g.) but in Owen's description, and also in that specimen which has been described by Valenciennes, there are many more tentacula—twelve in Owen's specimen, and thirteen in that of Valenciennes. The last-named author calls this part the superior pair of the internal arms. Toward the inferior part of the head, nearer to the infundibulum, which is situated at the median ventral line, there are two other processes in Owen's and Valenciennes' specimens:—the inferior labial processes of the former—the inferior pair of the internal arms of the latter. Owen attributes, also, twelve tentacula to each of these processes. In this point my specimen is entirely different. On the right side I found four tentacula; three on a common flat pedunculus; the fourth and inferior on a separate digitation. I also cannot agree with Owen in calling these inferior labial processes—interior as they were in his specimen. In the specimen examined by me they were, on the contrary, more interior than the superior labial processes. But at the left side a still greater difference was to be observed. Instead of a labial process, there was a great conoid body compressed from each side: at the basis its measure, from the dorsal to the ventral surface, was one inch ten lines; from the right to the left only one inch. This part was proved, by dissecting it, to be formed by the union of four unusually developed tentacular slips; one of which was shorter and more free; the three others chiefly composed the singular body. This part occupied a great space in the interior of the tentacular circle of the head; and, perhaps, its great development may be the cause of the more imperfect state of the other three pair of labial processes.

Prof. OWEN regarded the observations of Prof. Van der Höven as of more importance than those of Valenciennes. The difference of number in the tentacles proved that there was a range of variation in this respect; and, therefore, not to be relied on. He had examined a second specimen of the Nautilus,

and had found that the labial processes were inferior, and not interior, as stated by Prof. Van der Höven. He felt deeply indebted to the Professor for the kind manner in which he had brought forward the points in which he differed from himself.

Mr. H. E. STRICKLAND pointed out the various characters external and internal, which prove the Dodo to be an aberrant genus of the family *Columbidae*, and to have no connexion whatever with the *Vulturæ*. His arguments were chiefly drawn from the form of the beak, the position of the nostrils, the form of the palatine bones, of the nasal fissures, and of the zygomatic bones, the muscular gizzard, the shape of the feet, the structure of the calcaneal processes, and of the posterior metatarsal,—all which closely agree with the Pigeons, and especially with the genus *Treron*.

Dr. MELVILLE, who has lately made a minute examination of the head and foot of the Dodo, drew attention to some additional characters, which confirmed Mr. Strickland's view of the affinities of that bird to the Pigeons. The PRINCE OF CANINO stated that he was convinced that the Dodo was neither a vulture for an ostrich; but he must differ from his friend, Mr. Strickland, in placing it amongst the Pigeons. He believed it was as much like the Gallinæ as the stones found in its gizzard did not prove it a Pigeon. The sternum resembled more that of gallinaceous birds or even the struthious than that of the Pigeons.—Dr. MELVILLE maintained that the sternum of Dodo more nearly resembled those of the Pigeons than of any other family. The skin of the Dodo proved that it was a pigeon.—Mr. PHILLIP DUNCAN stated that the notices of the habits of the Dodo were quite opposed to the notion that it was a pigeon. It was evidently not a frugivorous bird, as when first taken its flesh was so distasteful and smelt so badly that no one would attempt to eat it. He believed it a bird *sui generis*.

Prof. M. EDWARDS read an elaborate and learned paper 'On the Circulation of the Blood in the Crustacea,' in which he entered into an historical criticism on this subject; and stated the conclusions at which he had himself arrived. He also exhibited some specimens of beautifully dissected insects prepared by M. Blanchard, in which the existence of an exterior peritoneal tunic was found to exist around the central vessel of the circulatory system of insects.

Dr. MELVILLE inquired if all the blood in Crustacea passed through the branchial cavities.—Prof. M. EDWARDS replied in the affirmative.—Mr. G. NEWPORT expressed his pleasure at seeing the preparations of M. Blanchard; and believed that they explained some of the difficulties which he had formerly pointed out in the anatomy of insects. He had regarded the external tunic of the dorsal vessel of insects as auricular.

'On the Families of British Lamellibranchiate Mollusca,' by Prof. E. FORBES.—The object of this communication is to explain a classification of the *Lamellibranchiate Conchifera* intended to be adopted by the author and Mr. Hanley in their forthcoming work on the British Mollusca. It is an attempt to group our native species in natural families founded upon the more important and, at the same time, conspicuous features in the organization of the animals. The characters of the mantle, the syphons, and the foot are taken as a basis, though recognized as of variable importance in the different tribes. The general habit, and often the sculpture, of the shell is usually in striking accordance with the most essential features of the animal. Characters derived from the hinge and from the position of the ligament, hitherto mainly depended upon by conchologists, prove to be in the majority of instances bad guides for determining the natural affinities of the mollusk, and seldom of more than generic value.

The following are the separate families adopted by the authors:—

## SECTION A.—DYMIRIA.

1. PHOLADIDÆ—including *Teredo*, *Pholas*, and *Gastrochena*, as stated by tribes; the last associated with *Saricava* and *Venerupis*, and probably *Neera*, *Poromya*, and *Sphenia*. Animal with a mantle closed in front, leaving a small antea aperture for the passage of the truncate or digitiform foot. Siphons united nearly to their extremities, their apertures ciliated.
2. MYADÆ—including *Mya*, *Panopæa*, *Lutraria*,

and perhaps *Corbula*. Mantle closed, except anteaally, where it is open for the passage of a thick and digitiform but not large foot. Siphons long, united to their extremities (which are slightly fimbriated), inclosed in an epidemic sheath.

3. *SOLECIDÆ*.—of which *Solen* is the only British genus. Mantle closed, except anteaally, where it is open for the passage of a very large, thick, obliquely truncate foot. Margins of mantle, where free, partly fimbriated. Siphons short, united, unequal, with ciliated margins.

4. *SOLECURTIDÆ*.—*Solecurtus*. Mantle open anteriorly, for the large, thick, apiculated foot. Siphons, with an enlarged united base, divided at their extremities, and having fimbriated apertures.

5. *PANDORIDÆ*. Mantle open for a falcate foot. Siphons unequal, partly united and divergent, with fimbriated apertures. *Pandora*, *Lyonsia*.

6. *TELLINIDÆ*. Mantle open and fimbriated at the margin. Foot digitiform or triangular. Siphons long, separated, often nearly equal, and having plain apertures. *Thracia* (?), *Scrobicularia*, *Abra*, and *Montacuta* (?) form one section of this group; *Tellina* and *Psammobia* a second and more typical division.

7. *DONACIDÆ*. Mantle open, fimbriated at the margin. Foot broadly triangular. Siphons unequal, separate, and fimbriated at the edge. *Donax* and *Mesodesma*, and probably also *Diodonta*.

8. *VENERIDÆ*. Mantle open, fimbriated at the margin. Siphons united nearly to their strongly fimbriated extremities. Foot triangular. *Macra* links this group with the last. *Venus* and its sub-genera are typical.

9. *CYPRINIDÆ*. Mantle open, fimbriated. Siphons very short, united or nearly so; one with aperture fimbriated, the other plain. *Cyprina*, *Astarte*, *Circe*.

10. *CARDIADÆ*. Mantle open, fimbriated. Foot hamate and digitiform. Siphons very short, united nearly to their ends. Apertures, one plain and one fimbriated. *Cardium*.

11. *CHAMADÆ*. Mantle closed, except a small aperture for the foot, and two fimbriated siphonal openings. Foot hamate. *Isocardia*.

12. *LUCINADÆ*. Mantle united in great part, leaving an opening anteaally for the foot, which is slender and digitiform. Siphons very unequal, one being often nearly obsolete; both apertures plain. *Lucyna*, *Cyclas* (?).

13. *KELLIADÆ*. Mantle closed, except a small aperture for the foot, and two nearly sessile plain siphonal openings. *Kellia*, *Galeomma*, *Lepton* (?).

14. *UNIONIDÆ*. Mantle open. Siphons very short, fimbriated; sometimes one obsolete. Foot very large. *Unio*, *Anodon*.

15. *DREISSENADÆ*. Mantle in great part closed. Siphons very short, fimbriated, and foot digitiform. *Dreissena*.

16. *MYTILIDÆ*. Mantle open, and not closed, or only partly closed to form siphons. Foot very small. *Mytilus*; and in an allied group, *Pinna*, and *Avicula*.

17. *ARCADÆ*. Mantle open. Siphons very short, or considerably developed and then united. Foot disciform. *Arca*, *Pectunculus*, *Leda*, *Nucula*.

#### SECTION B.—MONOMYARIA.

18. *PECTENIDÆ*. Mantle completely open, fimbriated and everted. Foot well developed. *Pecten*, *Lima*.

19. *OSTREADÆ*. Mantle freely open. Foot obsolete. *Astrea*, *Anomia*.

A discussion followed the reading of this paper, in which by the PRINCE OF CANINO, MR. LOVELL REEVE, DR. CARPENTER, and PROF. MILNE EDWARDS, took part. The principal points alluded to by the speakers were the position of particular genera of shells in the arrangement of Prof. Forbes.

'On the Anatomy of Scyllaea,' by A. HANCOCK and D. EMBLETON, M.D.—The internal structure of this animal was found pretty accurately to agree with the details given by Cuvier, though some important matters relative to the digestive apparatus seem to have been overlooked. The presence of a gland at the commencement of the oesophagus, its small stomach receiving large ducts from the biliary masses, its large and long intestine approximate it to the *Dorididæ*; but the stomach with an internal dental apparatus would appear to be peculiar. Its branched system of tubes in the skin and branchial tufts show its relation to the *Eolididæ*, but the re-division of some of these tribes in the periphery of

the globular biliary organs with the convolutions of which they communicate on the one hand, and the passage of others on the other hand into the intestinal canal, are peculiarities of structure not found in either of the families mentioned.

'Notes on British Mollusca, with Descriptions of New Species,' by J. ALDER and A. HANCOCK.—The species described have been discovered since the last meeting. They are *Proctonotus* (?) *splendidus*, remarkable for bearing a crest between the dorsal tentacles by which they are united together at the base. It is from Torbay and Fowey. 2. *Scyllaea pelagica*, taken at Falmouth by Mr. Cocks. 3. *Tritonia lineata*, from Scarborough. 4. *Eolis Peachii*, dredged by Mr. Peach in Fowey Harbour. 5. *Eolis exigua*, or *Laminaria*, at Fowey and Falmouth, possibly the *Tergipes lacunatus* of Löwen. 6. *Chalidis nigricans*, at Falmouth; with 7. *Acteonina corrugata*, and 8. the type of a new genus, *Ictis*, allied to *Acteonina*, but differing in having dorsal tentacles and in the absence of the groove and angles at the sides of the head. The animal is limaciform. The head is scarcely angulated, and bears two linear tentacles on its dorsal aspect; behind and a little anterior to which are the eyes; from a little behind the centre of the back. A single species, *Ictis Cocksii*, from Falmouth. The authors propose to unite the genera, *Elysia*, *Placobranchia*, *Acteonina*, *Chalidis*, *Limapontia* and *Ictis* in a new order, characterized by the absence of specialized breathing organs or other dorsal appendages, and for which they propose the name of *Pellibranchiata*.

'Notice of Dredging Researches in Progress,' by Prof. E. FORBES.—A number of specimens of remarkable British animals were laid on the table, preserved in very perfect condition by Mr. Goadby; who is at present accompanying Mr. M'Andrew on a dredging voyage in the seas of the Zetlands and Hebrides. Mr. M'Andrew has forwarded to the meeting specimens of a living *Terebratula*, dredged off Skye; identical with the crag fossil, *T. cistellula*, of Mr. Searles Wood. A new *Holothuria*, discovered by Mr. Gwynn Jeffreys, was also laid on the table.

'On the animal of Lepton Squamosum,' by J. ALDER.—The mantle of this hitherto undescribed mollusk is very large, extending much beyond the shell, is fringed with filaments; one of which is much longer than the rest. The mantle is open, except before and behind; where it forms a short siphon, with a single aperture. The foot is very large, thick and tapering; and has a disk like the foot of *Nucula*. It forms a fine Byssus. The branchial leaflets are two on each side.

Mr. WATERHOUSE read a paper 'On the Geographical Distribution of the Rodentia.'

Mr. WESTWOOD read a paper 'On the Habits of some blind Insects.'

#### WEDNESDAY.

'On the Diatomaceous Vegetation of the Antarctic Ocean,' by DR. J. C. HOOKER.—The author found the Diatomaceæ in countless numbers between the parallels 60° and 80° south, where they gave a colour to the sea, and also to the icebergs floating on it. The death of these bodies in the south Arctic Ocean is producing a sub-marine deposit, consisting entirely of the siliceous particles of which the skeletons of these vegetables are composed. This deposit exists on the shores of the Victoria Land, and at the base of the volcanic mountain Erebus. Dr. Hooker accounted for the fact that the skeletons of Diatomaceæ had been found in the lava of volcanic mountains, by referring to the position of the Diatomaceæ deposits in relation to Mount Erebus, which lie in such a position as to render it quite possible that the skeletons of these vegetables should pass into the lower fissures of the mountain, and then passing into the stream of lava, be thrown out unacted upon by the heat to which they have been exposed.

Prof. ALLMAN made some remarks on the remarkable character of the Diatomaceæ, showing how, through their siliceous skeleton, they approached the mineral kingdom,—their power of locomotion, the animal kingdom,—and the possession of endochrome, the vegetable kingdom.

The PRINCE OF CANINO read a paper on the classification of the Testudinata.—The three principal groups into which he divided the whole of the species

were,—1. Testudinidæ; 2. Trionycidæ; Chelonidæ.

Prof. NILLSON read a paper on the disappearance of certain Mammalia from particular districts of the continent of Europe.

Mr. PEACH announced some additions to the Cornish Fauna. The whole of the species of Zoophytes found in the British islands are 224, of which 150 have been found in Cornwall. He now added *Corymophrys nutans*. In shells he had found *Lepton squamosum*, *Pleurotoma teres*—in other departments, *Planaria vittata*, *Oniscus ceruleatus*. He also exhibited specimens of Botryll, preserved in Canada balsam, with all the colours perfect; also the nidus of the Gamellus, attached to the under-side of stones found in Fowey Harbour.

Mr. WESTWOOD stated that *Oniscus ceruleatus* was an interesting discovery, and described its structure, and drew particular attention to the enormous development of the thoracic segments.—Mr. CHARLES WORTH inquired the particulars of the finding *Lepton squamosum*, as this had been hitherto regarded as an extinct species, belonging to the older Tertiary.—Prof. E. FORBES drew attention to the *Pleurotoma teres*. He had first dredged it in the *Egean*; it had since been found in Norway, by Prof. Löwen, and now in Cornwall. He believed it was always found in what he called the glacial outliers of modern seas—those places he had recommended for cod-fishing.

Mr. W. THOMPSON announced the discovery of a species of *Teredo*, *Limnoria*, *Xylophaga* and *Chelura*, in Ireland, all of which were found contributing to the destruction of a pier.

A discussion followed the reading of this paper, on the mode in which the Mollusca bore into wood and other materials.—Prof. E. FORBES stated that some of the Gasteropoda had tongues covered with silica to enable them to bore, and it was probably by some process of this kind that all the Mollusca bored.—Mr. PEACH had never observed the species of *Pholas* to turn round in their holes, as had been stated by some observers, although he had watched them with great attention.—Mr. CHARLES WORTH referred to the fact that, in one species of shell, not only did the hole in the rock which the animal occupied increase in size but also the hole through which it projected its siphons.

'On the genera *Nebalia* (Leach), and *Chirocephalus* (Prevost); *Branchipus* (Schæffer), by Dr. BAIRD.—Upon an attentive examination of the species of the genus *Nebalia*, described by different authors, the writer is induced to reduce them to two:—1st. *Nebalia bipes*, *Cancer bipes* (Fabricius and Herbst), *Monoculus rostratus* (Montagu); *Nebalia Herbstii* (Leach). 2nd. *Nebalia Geoffroyi* (Milne Edwards); *Nebalia Straussii* (Risso). With regard to the *Chirocephalus* of Prevost, it appears evident that the genus *Branchipus*, as originally described by Schæffer, and minutely figured by him in all its details, is quite distinct from the species found in England, and described by authors under that name. The differences are so great and well marked, that it is necessary to refer them to the genus *Chirocephalus* of Prevost, so beautifully figured at the end of Jurine's work on the *Monoculi* of Geneva.

#### TUESDAY.

##### SECTION E.—PHYSIOLOGY.

'On the supposed Antagonism of Ague and Phthisis,' by Dr. GROSHANS.

'On a Disease occurring in the Prison at Ely,' by Dr. FISHER.

'On the Cure of Diseases by Motion,' by Dr. GEORGI.

'On the Blood in Erysipelas,' by Mr. GOODMAN. Dr. Acland exhibited a series of preparations sent by Prof. HYRTL.

This section is to be united to that of Zoology and Botany. Its place will probably be occupied by that of Ethnology, with which it is proposed to combine Physical Geography, hitherto treated as a subsection to Geology.

#### MONDAY.

##### SECTION F.—STATISTICS.

'On the Imports of Indian Cotton, as compared with American Cotton,' by Prof. F. ROYLE.—He began by describing the experiments made to improve the cultivation of cotton in India by American planters invited to India at the expense of the Hon. East

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India Company. These planters, seven in number, conducted their experiments over a wide extent of country, varied in soil and climate, in the three Presidencies. These experiments were undertaken in 1840; the most favourable country was Bundelcund, but two years of drought led to a failure. The next experiment was at the foot of the Himalayas, but the insects destroyed the plants. In Coimbatore the experiment, however, was successful; better kinds of cotton were introduced, and cotton was perfectly obtained by the American saw-gin. The cotton brought a good price in Liverpool. It appears that four thousand square miles are applicable to the growth of American cotton in the southern provinces of India. Since a new system of assessment has been introduced, at from eight to fourteen annas per acre, the cultivation of cotton by the natives has largely increased. Mr. Elphinstone has recently produced even better cotton than any of the American kinds, by hybridizing the native plant. The continued decrease of the price of American cotton is a fact of

some importance: at the beginning of the century the price was 18d. per lb. and has fallen to 6d., a natural result of the increase of production. The demand for Indian cotton is generally dependent on the price of American cotton, and is subject to marked fluctuations. To this uncertainty Prof. Royle ascribed the weak state of the cotton commerce of India. Were demand steady, supply would be regular. Prof. Royle then produced a map of India; on which he pointed out the most favourable spots for the cultivation of cotton, stating the local circumstances of each.—But these details could only be interesting to those minutely acquainted with the geography of India.

Major-Gen. BRIGGS detailed several experiments which had been made in 1816;—and attributed the failures to a bad choice of soil. He also stated that there was a large demand for uncleaned cotton in India, and that this cause disinclined the natives to clean their cotton.

Mr. BELKE read a paper 'On the Distribution of

Population in Denmark.'—In Holstein the proportion of females to males is less than in the other districts. The proportion of manufacturers is greater in the Duchies than in Denmark Proper. In four years there were 9,573 marriages and 130 divorces. The amount of marriages in proportion to population has remarkably diminished since the commencement of the century, but the average duration of life has increased. The rate of increase of population is a little higher than in England. These were the chief results of the paper viewed statistically; but there were some ethnological facts added, which would more appropriately have been communicated to another Section.

Mr. NEISON then read a paper 'On Education and Crime in England and Wales in 1834-44.'

TUESDAY.

Mr. J. FLETCHER read an elaborate paper 'On the Statistics of Education and Crime,' which occupied more than two hours; but the general results of which are included in the following table:—

Comparison of the different Districts of England and Wales in respect to Ignorance, Improvidence, and Crime.

Divisions.	Inhabitants.	Real Property.	Realized Properties.	Progress of Instruction.	Ignorance.	Improvident Marriages.	Bastardy.	Pauperism.	Crime.	Savings.	Additional.
Population in 1841.	Proportion per Cent. of Real Property Assessed to the Income Tax in 1843, above and below the Average to the like Population in England and Wales.	Proportion per Cent. of Persons of Independent Means in 1841, above and below the Average of all England and Wales, upon the like Population.	Excess or Deficiency per Cent. of the Men signing the Marriage Register with Marks in 1844, as compared with 1838-40, in each County.	Proportion per Cent. of the Births Registered under 21 Years of Age in 1844, above and below the Average of all England and Wales, upon the like Number of Marriages.	Proportion per Cent. of the Births Registered in 1844, above and below the Average of all England and Wales, upon the like Number of Registered Births.	Proportion per Cent. of the Births Registered in 1844, above and below the Average of all England and Wales, upon the like Number of Registered Births.	Proportion per Cent. of the Births Registered in 1844, above and below the Average of all England and Wales, upon the like Number of Registered Births.	Proportion of Paupers Relieved in 1844, above and below the Average of all England and Wales, upon the like Population.	Proportion per Cent. of Commitments above and below the calculated Average for all England and Wales, upon the same Amount of Population of the like Ages, in 1842, 3, 4.	Proportion per Cent. of Deposits in Savings Banks 20th Nov. 1844, above and below the Average to the like Population in all England and Wales in 1841.	Proportions to be written in Read or 1833, or 1844.
DISTRICTS AND COUNTIES.											

SUMMARY OF THE LEAST INSTRUCTED DISTRICTS.

1. South Midland and Eastern Agricultural Counties	1,977,247	+ 7.66	-14.7	-2.2	+33.8	+38.8	+12.6	+39.5	+12.7	- 7.6	+ 9.4	-4.3
2. The South Midland Agricultural Counties, with Domestic Manufactures	857,108	+12.18	- 2.5	-2.3	+27.3	+55.2	+ 0.9	+20.1	+20.1	-15.9	+23.1	-4.5
3. Western (Celtic) Agricultural and Mining Counties	1,387,237	-27.70	- 3.3	-2.8	+30.9	-27.6	- 8.8	- 3.5	-51.9	-45.2	+ 6.0	-0.2
4. The Northern and Midland Manufacturing and Mining Counties	5,531,747	- 8.87	-25.2	-0.9	+14.9	+28.9	+14.6	-17.8	+11.2	-17.9	+ 4.4	-2.7
Total .. .. .	9,633,339	- 6.49	-18.7	-1.6	+21.0	+25.5	+ 9.8	+ 1.0	+ 4.0	-19.6	+ 7.5	-3.2

SUMMARY OF THE MOST INSTRUCTED DISTRICTS.

1. Southern Agricultural and Maritime Counties	1,911,597	- 5.42	+21.7	-0.9	-10.8	-32.8	-11.2	+14.6	- 2.8	+32.4	- 2.9	-3.2
2. Two Metropolitan Counties	2,159,314	+22.64	+6.66	..	-50.1	-62.5	-48.5	-12.5	+11.3	+55.6	-27.0	-3.0
3. North Midland and North Eastern Agricultural Counties	936,050	+29.88	-16.5	-1.7	+ 9.5	- 1.0	+10.2	- 3.6	- 4.3	+ 8.7	+ 7.7	-5.1
4. Northern Agricultural and Mining Counties	1,246,433	- 3.08	+ 8.7	-1.9	-38.2	-26.9	+11.3	-10.3	-42.8	- 0.9	-10.6	-4.1
Total .. .. .	6,253,402	-10.02	+29.9	-0.8	-32.5	-39.9	-16.3	- 1.7	- 6.1	+30.3	-12.8	-3.3
Balance on the side of Districts of Least Instruction	..	..	..	..	..	..	..	..	..	..	..	..
Balance on the side of Districts of Most Instruction	..	16.51	47.6	..	53.5	65.4	26.1	2.7	10.1	49.9	..	..
Grand Total of England and Wales	15,906,741	..	..	-1.2	..	..	..	..	..	..	..	-3.1

As this paper is likely to come before us in the form of a substantive work, we shall not at present enter on any development of its statements; but a portion of the brief conversation to which it gave rise deserves to be noticed.

Dr. COOKE TAYLOR, in reference to a discussion which had taken place previously in the committee, on the propriety of making Section F. the Section of Statistical and Economical Science, said, that it had already been stated by the President that the mere collection of facts, without a strict determination of their import, was unscientific. Anything might be proved by figures and tabulated statements, if their logical and economic value was not investigated. Of this there was a striking example in Mr. Neison's paper of the preceding day. That gentleman had inferred from an increase in the criminal returns that there was an increase of crime in the country. Such an inference was unwarranted; an increase in criminal returns may indicate increased vigilance of police, and even an increase of virtue, by proving

that the population took an active part in the detection and suppression of crime. It was notorious that the criminal calendars of the southern counties of Ireland were frequently highest when there was the greatest amount of pradal agitation. One of Mr. Fletcher's conclusions was fallacious for another reason. There had been no note taken of the immigrant population, which in the manufacturing districts bore a large proportion to the stationary population. It had been proved repeatedly, that the moral and intellectual condition was of the lowest kind; and hence it was evident that strangers were answerable for the large amount of ignorance and crime with which the manufacturing districts had been credited. In consequence of the lateness of the hour the discussion was abruptly brought to a close, but it was understood that the "import of facts" would form a subject of discussion at Swansea.

'On the Variations in the Supply of Silver Coin in Ireland during the Operations for the Relief of

Distress in 1846-47,' by Prof. HANCOCK.—The variations in the supply of silver coin in Ireland were detailed in the correspondence on the measures adopted for the relief of distress which had been presented to Parliament. During the greater part of the autumn, and especially in the poorest districts, the Board of Works found it extremely difficult, and in some places impossible, to get silver coin for the weekly payments even in places where they had previously sent large quantities of coin. This scarcity did not abate till December; and notwithstanding its general abatement, it continued excessive in the poorest districts until after that period. In February the scarcity had entirely disappeared, and the banks had not room for all the coin which was poured in upon them. This scarcity had been by some attributed to "hoarding;" but a scarcity from such a cause would have been gradual instead of sudden—would have been accompanied by a corresponding scarcity in gold and notes, and would not have been greatest in the poorest districts. Others had attributed the

scarcity to the mercenary motives of shopkeepers and merchants. But this was only a form of the old prejudice against merchants, founded on the fallacy of supposing that it is their conduct which determines the value of goods, instead of the value of goods determining their conduct. The writer accounts for the scarcity of silver coin in Ireland by the stoppage of barter, consequent on the failure of the potato crop. This failure stopped the concave system, and rendered the payment of rent and other debts in labour instead of money no longer practicable, and thus put an end to the chief source of the extensive system of barter prevalent in the agricultural districts of Ireland. A demand was thus suddenly created for a large quantity of silver coin to be used as currency in the small transactions previously carried on by barter. Such being the cause of the scarcity, it remained to consider the measures which were and those which ought to have been adopted to obviate its consequences. The Government imported a large quantity of coin direct from the Mint, and also employed the Bank of Ireland to import large quantities from the Bank of England, and appointed an officer to superintend the distribution of the coin in Ireland. This interference with trade led to the usual results predicted by economists—the business was badly done at a great cost. Thus, after the Government had been importing for several months, there was in December a total want of coin at Skibbereen, and in February many of the branch banks were filled with coin in consequence of excessive importation. Instead of interfering with trade, the Government should have offered for the coin its market price in the localities where it was wanted. In consequence of the demand for it incident on the destruction of barter, its price has risen in those places; hence the impossibility of getting change, that is, twenty shillings for a pound, as the twenty shillings had become more valuable than the one pound. By offering the market price the local banks and other parties would have been induced to import silver coin, and to economize its use as much as possible, so that it would have been distributed exactly in the proportions in which it was wanted, and no excessive importation would have taken place; or had any mistakes been made by the banks or private parties, they, and not the public, would have been the losers. The ignorance of economic science displayed by public officers in the management of the supply of silver coin ought to make every one tolerant of the greater ignorance shown by some parties in Ireland in the prejudices against English grain merchants, as having caused the high prices of food, and against the Government, as having favoured the supposed interests of the merchants. It should lead every one to look with pity rather than anger at the distrust and want of gratitude with which, in some instances, the munificent bounty for the relief of Irish distress has been received, and to endeavour, by promoting the knowledge of economic science, to remove the ignorant prejudices which have led to the motives of the English merchants and the English people being so misunderstood.

Col. SYKES read a paper 'On the relative Cost of Cerealia in India and England.' It was a careful analysis and comparison of the market prices from the principal grain markets of India, extending over a series of several years; and to a certain extent justified the conclusion that India may become a grain market for England in seasons of scarcity. It would, of course, be impossible to publish these numerous tables in *extenso*, and an abstract of them would be unintelligible. It is, however, only just to say that they were collected with great care, and reduced with equal skill and industry.

Dr. TAYLOR referred to this paper as another proof of the necessity of attending to the 'import of facts.' He contended that price was a most unsafe indication of certain supply. The appearance of new purchasers in any one of the markets named would certainly raise prices to an indefinite extent. If Col. Sykes's valuable records had the effect of inducing English grain merchants to enter into regular trade with India, then it would probably be found that Hindustan would exhibit available and increasing resources. But the economic effects of the increase of an old demand, and the creation of a perfectly new demand, were different,—and on the results of the latter no man could rely. Prof. HAN-

cock advocated the same views, and thanked Col. Sykes for having collected such extensive lists of prices, which he declared to be valuable materials for economists.

The Section then adjourned.

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